

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Dawn Garrett Examiner #: 76167 Date: March 29, 2004  
Art Unit: 1774 Phone Number 272-1523 Serial Number: 091675, 201  
Mail Box and Bldg/Room Location: Remsen 5C75 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic Electroluminescent Device  
Inventors (please provide full names): Samue Tajami, Hidetsugu Ikeda,  
Chushio Hosokawa, Takahashi Arahane  
Earliest Priority Filing Date: 9/30/1999

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search attached compounds 17 and 18  
wherein at least one substituent is alkeneyl  
(R5-R16)  
or amino group

Thank you

(A partial search of compound 17 was done  
in March 2002)

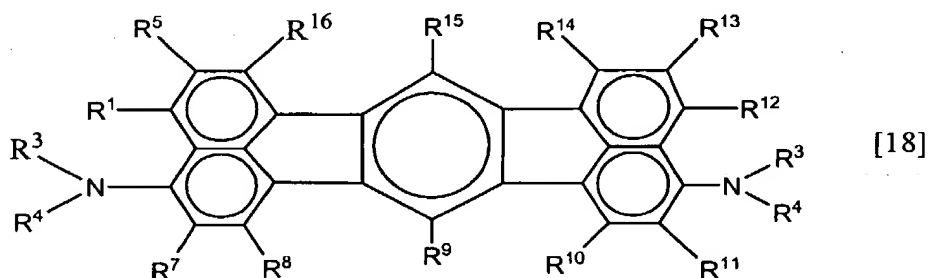
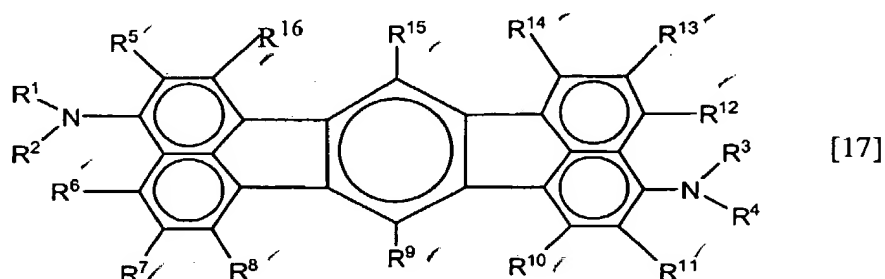
(NOT MUCH REAL CLOSE)

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## STAFF USE ONLY

|                                       | Type of Search                       | Vendors and cost where applicable |
|---------------------------------------|--------------------------------------|-----------------------------------|
| Searcher: <u>EL</u>                   | NA Sequence (#) _____ STN _____      | \$ <u>208.02</u>                  |
| Searcher Phone #: _____               | AA Sequence (#) _____                | Dialog <u>(subset)</u>            |
| Searcher Location: _____              | Structure (#) <u>✓</u> <u>(3)</u>    | Questel/Orbit                     |
| Date Searcher Picked Up: _____        | Bibliographic <u>✓</u> <u>(encl)</u> | Dr. Link                          |
| Date Completed: <u>3-31-04</u>        | Litigation _____                     | Lexis/Nexis                       |
| Searcher Prep & Review Time: <u>5</u> | Fulltext _____                       | Sequence Systems                  |
| Clerical Prep Time: _____             | Patent Family _____                  | WWW/Internet                      |
| Online Time: <u>55</u>                | Other _____                          | Other (specify) _____             |

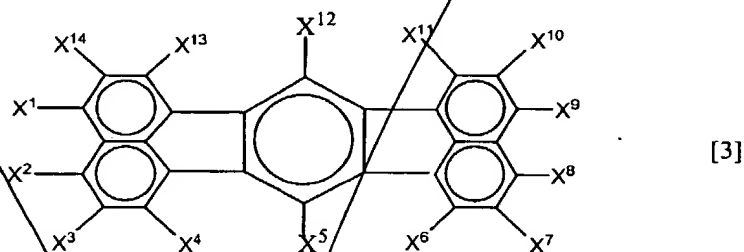
of substituted group  $X^{12}$  and  $X^{14}$ ,  $X^3$  and  $X^4$ ,  $X^{10}$  and  $X^{11}$ , and  $X^6$  and  $X^7$  with any ring structure in the general formula (3) is omitted:



wherein  $R^1$  to  $R^4$  each independently represent an alkyl group having 1 to 20 carbon atoms or a substituted or unsubstituted aryl group having 6 to 30 carbon atoms; in one or both of a pair of groups represented by  $R^1$  and  $R^2$  and a pair of groups represented by  $R^3$  and  $R^4$ , the groups forming the pair may be bonded through  $-O-$  or  $-S-$ ;  $R^5$  to  $R^{16}$  represents hydrogen atom, a linear, branched or cyclic alkyl group having 1 to 20 carbon atoms, a linear, branched or cyclic alkoxy group having 1 to 20 carbon atoms, a substituted or unsubstituted aryl group having 6 to 30 carbon atoms, a substituted or unsubstituted aryloxy group having 6 to 30 carbon groups, a substituted or unsubstituted arylamino group having 6 to 30 carbon atoms, a substituted or unsubstituted alkylamino group having 1 to 30 carbon atoms, a substituted or unsubstituted arylalkylamino group having 7 to 30 carbon atoms or a substituted or unsubstituted alkenyl groups having 8 to 30 carbon atoms; a pair of adjacent groups

represented by  $R^5$  to  $R^{16}$  and a pair of adjacent substituents to groups represented by  $R^5$  to  $R^{16}$  may form a cyclic structure in combination; and at least one of substituents represented by  $R^5$  to  $R^{16}$  comprises an amine group or an alkenyl group.

Claim 19 (New): A compound selected from compounds represented by the following general formula [3], [17] and [18]:



wherein  $X^1$  to  $X^{14}$  each independently represents hydrogen atom, a linear, branched or cyclic alkyl group having 1 to 20 carbon atoms, a substituted or unsubstituted alkoxy group having 6 to 30 carbon groups, a substituted or unsubstituted aryl group having 6 to 30 carbon atoms, a substituted or unsubstituted aryloxy group having 6 to 30 carbon groups, a substituted or unsubstituted arylamino group having 6 to 30 carbon atoms, a substituted or unsubstituted alkylamino group having 1 to 30 carbon atoms, a substituted or unsubstituted arylalkylamino group having 7 to 30 carbon atoms or a substituted or unsubstituted alkenyl groups having 8 to 30 carbon atoms; a pair of adjacent groups represented by  $X^1$  to  $X^{14}$  and a pair of adjacent substituents to groups represented by  $X^1$  to  $X^{14}$  may form a cyclic structure in combination; when a pair of adjacent substituents are aryl groups, the pair of substituents may be a single group; and at least one of substituents represented by  $X^1$  to  $X^i$ ,  $i$  representing a number of 12 to 14, comprises an amine group or an alkenyl group; with the premise that the combination of substituted group  $X^{13}$  and  $X^{14}$ ,  $X^3$  and  $X^4$ ,  $X^{10}$  and  $X^{11}$ , and  $X^6$  and  $X^7$  with any ring structure in the general formula (3) is omitted:

=> file reg

FILE 'REGISTRY' ENTERED AT 12:48:04 ON 31 MAR 2004  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2004 American Chemical Society (ACS)

=> d his

L1 FILE 'LREGISTRY' ENTERED AT 12:28:36 ON 31 MAR 2004  
STR

L2 FILE 'REGISTRY' ENTERED AT 12:37:43 ON 31 MAR 2004  
0 S L1

L3 FILE 'LREGISTRY' ENTERED AT 12:37:51 ON 31 MAR 2004  
STR L1

L4 FILE 'REGISTRY' ENTERED AT 12:38:19 ON 31 MAR 2004  
0 S L3

L5 FILE 'LREGISTRY' ENTERED AT 12:39:03 ON 31 MAR 2004  
STR L1

L6 FILE 'REGISTRY' ENTERED AT 12:40:18 ON 31 MAR 2004  
25 S L5

L7 STR L1

L8 0 S L7

L9 189 S L7 FUL  
SAV L9 GAR201/A

L10 0 S L1 SSS SAM SUB=L9

L11 8 S L1 SSS FUL SUB=L9  
SAV L11 GAR201A/A

L12 FILE 'CAOLD' ENTERED AT 12:46:03 ON 31 MAR 2004  
0 S L11

L13 FILE 'HCAPLUS' ENTERED AT 12:46:19 ON 31 MAR 2004  
3 S L11

L14 FILE 'ZCA' ENTERED AT 12:46:30 ON 31 MAR 2004  
3 S L11

L15 FILE 'HCA' ENTERED AT 12:46:47 ON 31 MAR 2004  
40 S L9

L16 81998 S (ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO OR

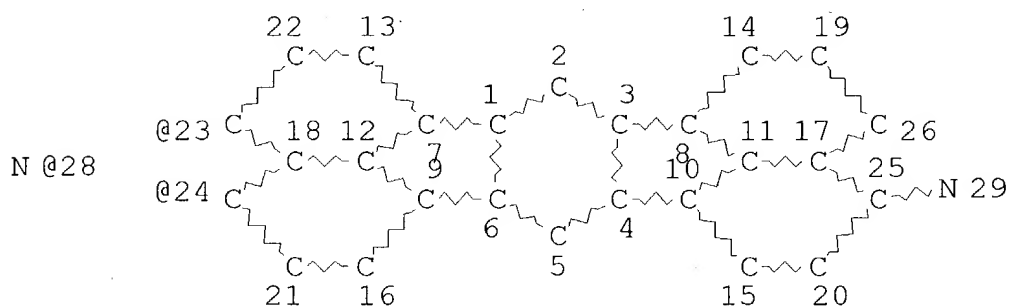
L17 12 S L15 AND L16

L18 3 S L11  
L19 9 S L17 NOT L18

FILE 'REGISTRY' ENTERED AT 12:48:04 ON 31 MAR 2004

=> d l11 que stat  
L1 STR

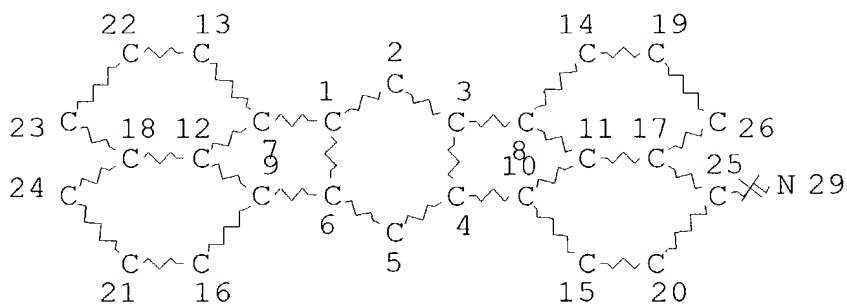
G1 30 N @33 C=C  
@35 36



VAR G1=33/35  
VPA 28-23/24 U  
NODE ATTRIBUTES:  
NSPEC IS RC AT 28  
NSPEC IS RC AT 29  
NSPEC IS RC AT 33  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 32

STEREO ATTRIBUTES: NONE  
L7 STR



## NODE ATTRIBUTES:

NSPEC IS RC AT 29  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 27

## STEREO ATTRIBUTES: NONE

L9 189 SEA FILE=REGISTRY SSS FUL L7  
L11 8 SEA FILE=REGISTRY SUB=L9 SSS FUL L1

100.0% PROCESSED 11 ITERATIONS  
SEARCH TIME: 00.00.01

8 ANSWERS

=&gt; file hca

FILE 'HCA' ENTERED AT 12:48:24 ON 31 MAR 2004  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

=&gt; d l18 1-3 ibib abs hitstr hitrn

L18 ANSWER 1 OF 3 HCA COPYRIGHT 2004 ACS on STN  
ACCESSION NUMBER: 139:204838 HCA  
TITLE: Condensed aromatic compounds for red phosphors  
and their organic electroluminescent device  
INVENTOR(S): Iwakuma, Toshihiro; Hironaka, Yoshio; Arakane,  
Takashi; Hosokawa, Chishio; Kusumoto, Tadashi  
PATENT ASSIGNEE(S): Sekiyu Sangyo Kasseika Center, Japan; Idemitsu  
Kosan Co., Ltd.  
SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND | DATE              | APPLICATION NO. | DATE     |
|------------------------|------|-------------------|-----------------|----------|
| -----                  | ---  | -----             | -----           | -----    |
| JP 2003238516          | A2   | 20030827          | JP 2002-41472   | 20020219 |
| PRIORITY APPLN. INFO.: |      |                   | JP 2002-41472   | 20020219 |
| OTHER SOURCE(S):       |      | MARPAT 139:204838 |                 |          |

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

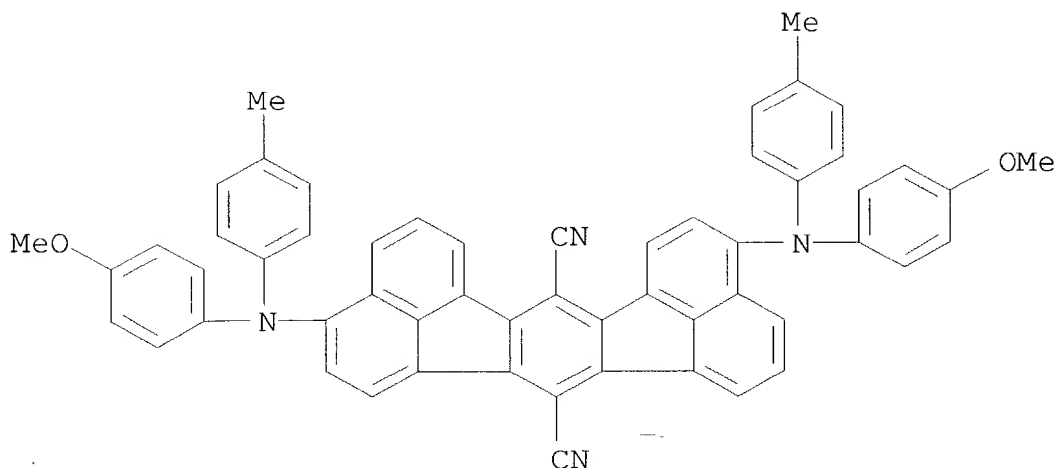
AB The condensed arom. compds. have fluoranthene skeletons bearing amino groups and electron-withdrawing groups, represented by general formulas I-IV (R1-R14 = H, C1-30 alkoxy, C1-30 alkoxy, C6-40 aryl, C3-20 trialkoxysilyl, C4-30 alkenyl, C7-40 arylalkyl, C6-40 aryloxy, CN, perfluoroalkyl, NO2, halo, NX1X2; every formulas contain  $\geq 1$  NX1X2 and  $\geq 1$  electron-withdrawing groups as the substituents; R1-R14 may form ring structures with adjacent groups; in I, II, and V, benzene rings in the line sym. center may be replaced by naphthalene or anthracene ring; in I, R2-R3 and R5-R6, or R9-R10 and R2-R3 may form ring to give naphthalene skeletons; in IV, R5-R6 may form ring to give naphthalene skeletons; X1, X2 = H, C1-30 alkyl, C6-40 aryl, C7-40 arylalkyl, C3-40 heterocyclic group; X1 and X2 may be bonded to each other and form ring; X1, X2, and fluoranthene skeleton groups may be bonded to each other and form ring structure). The org. EL device contains org. thin-film layer contg. condensed arom. compds. bearing amino groups and electron-withdrawing groups, i.e., I, in an electron-transporting layer or a hole-transporting layer.

IT **585538-20-1P 585538-21-2P 585538-38-1P**

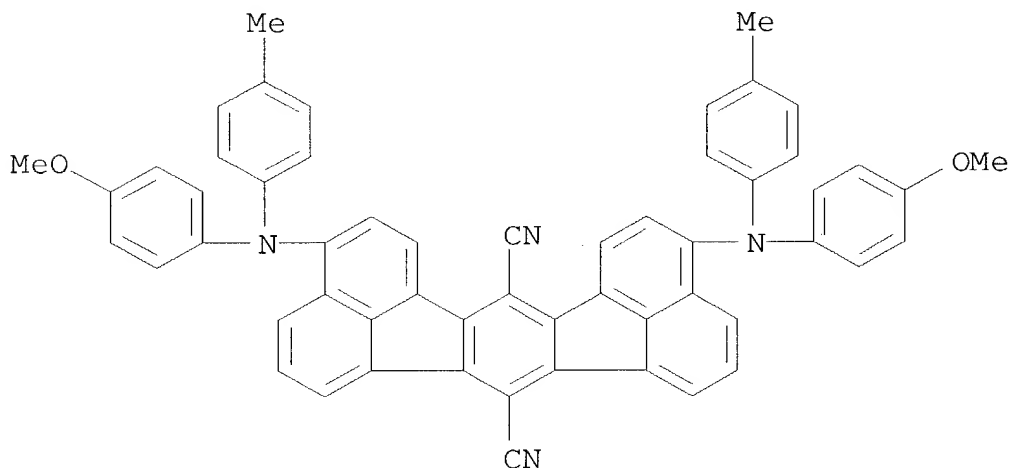
(condensed arom. compds. for red phosphors for org. EL device)

RN 585538-20-1 HCA

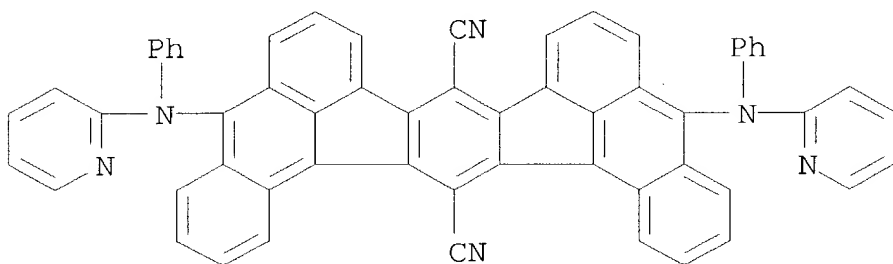
CN Acenaphtho[1,2-k]fluoranthene-7,14-dicarbonitrile,  
3,10-bis[(4-methoxyphenyl)(4-methylphenyl)amino]- (9CI) (CA INDEX  
NAME)



RN 585538-21-2 HCA  
CN Acenaphtho[1,2-k]fluoranthene-7,14-dicarbonitrile,  
3,11-bis[(4-methoxyphenyl)(4-methylphenyl)amino]- (9CI) (CA INDEX  
NAME)



RN 585538-38-1 HCA  
CN Benzo[1,2-a:5,4-a']diaceanthrylene-9,18-dicarbonitrile,  
5,13-bis(phenyl-2-pyridinylamino)- (9CI) (CA INDEX NAME)



IT 585538-20-1P 585538-21-2P 585538-38-1P  
(condensed arom. compds. for red phosphors for org. EL device)

L18 ANSWER 2 OF 3 HCA COPYRIGHT 2004 ACS on STN  
ACCESSION NUMBER: 138:245350 HCA  
TITLE: Novel aromatic diamine compound for organic  
electroluminescent element  
INVENTOR(S): Iwakuma, Toshihiro; Arakane, Takashi; Hosokawa,  
Chishio; Kusumoto, Tadashi  
PATENT ASSIGNEE(S): Sekiyu Sangyo Kasseika Center, Japan; Idemitsu  
Kosan Co., Ltd.  
SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.  
CODEN: JKXXAF



DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

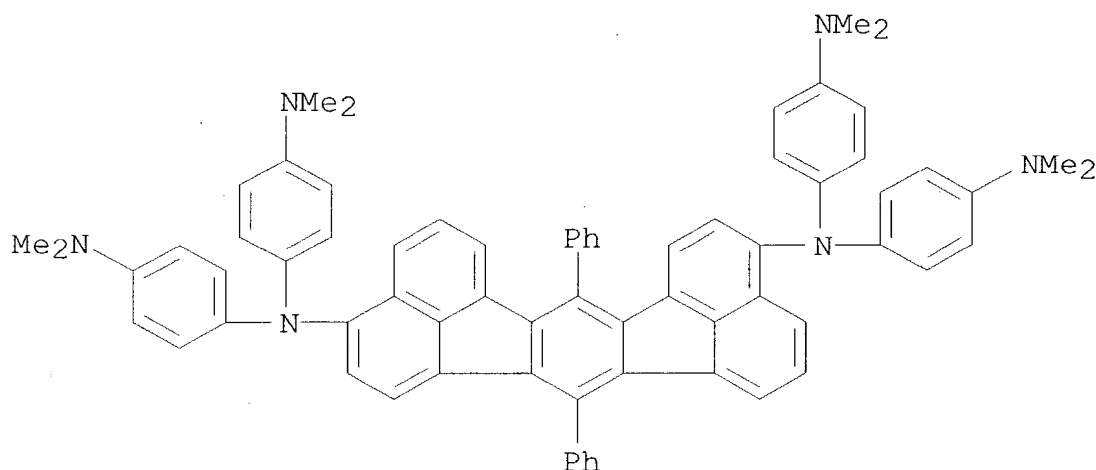
| PATENT NO.             | KIND | DATE     | APPLICATION NO.   | DATE     |
|------------------------|------|----------|-------------------|----------|
| JP 2003081924          | A2   | 20030319 | JP 2001-279435    | 20010914 |
| PRIORITY APPLN. INFO.: |      |          | JP 2001-279435    | 20010914 |
| OTHER SOURCE(S):       |      |          | MARPAT 138:245350 |          |

AB The invention refers to a novel arom. diamine compd. for org. electroluminescent devices, Ar<sub>3</sub>Ar<sub>4</sub>N-X<sub>1</sub>NAr<sub>1</sub>Ar<sub>2</sub> [X<sub>1,2</sub> = C<sub>16</sub>-60 divalent condensed arom. ring; Ar<sub>1</sub>-4 = C<sub>6</sub>-30 arom. ring, wherein at least one is -X<sub>2</sub>NR<sub>1</sub>R<sub>2</sub>; R<sub>1,2</sub> = C<sub>1</sub>-30 alkyl or C<sub>6</sub>-30 arom. ring; R<sub>1</sub> and R<sub>2</sub> may join together to form a ring].

IT **502182-87-8P 502182-88-9P**  
 (novel arom. diamine compd. for org. electroluminescent element)

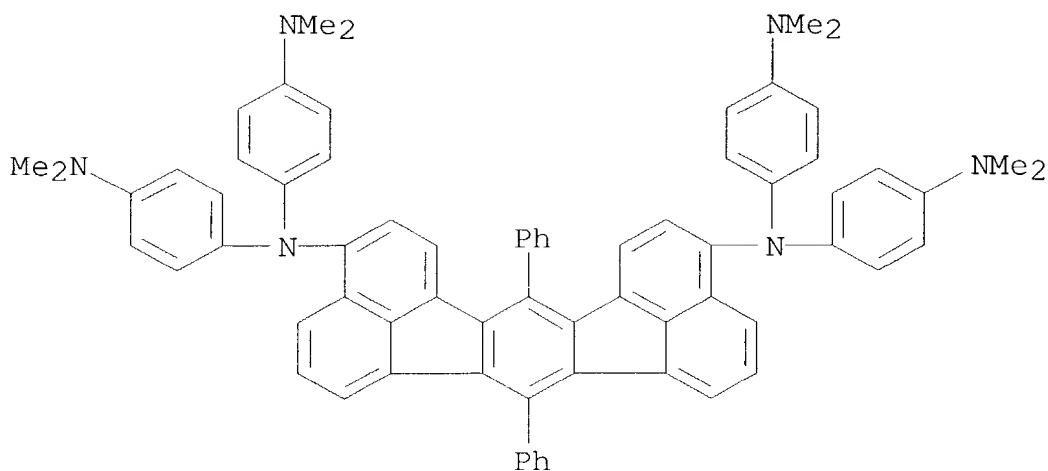
RN 502182-87-8 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N,N',N'-tetrakis[4-(dimethylamino)phenyl]-7,14-diphenyl- (9CI) (CA INDEX NAME)

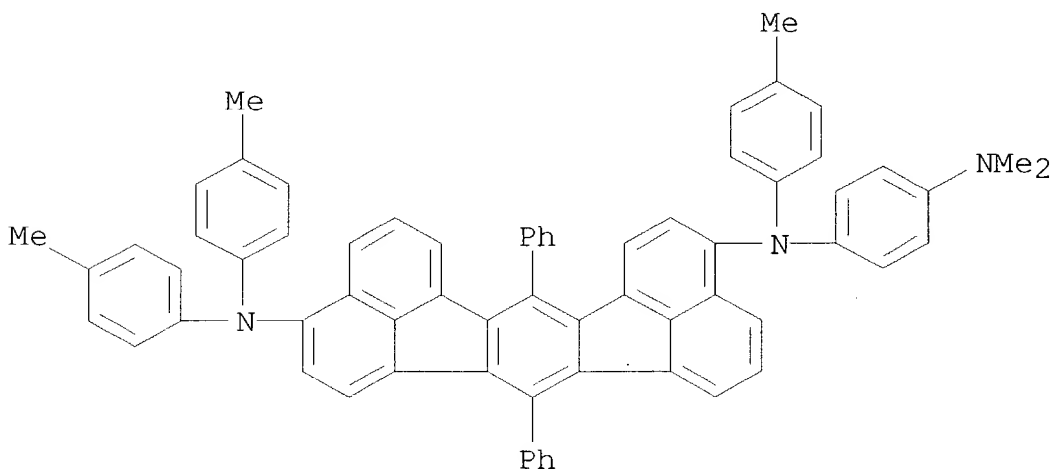


RN 502182-88-9 HCA

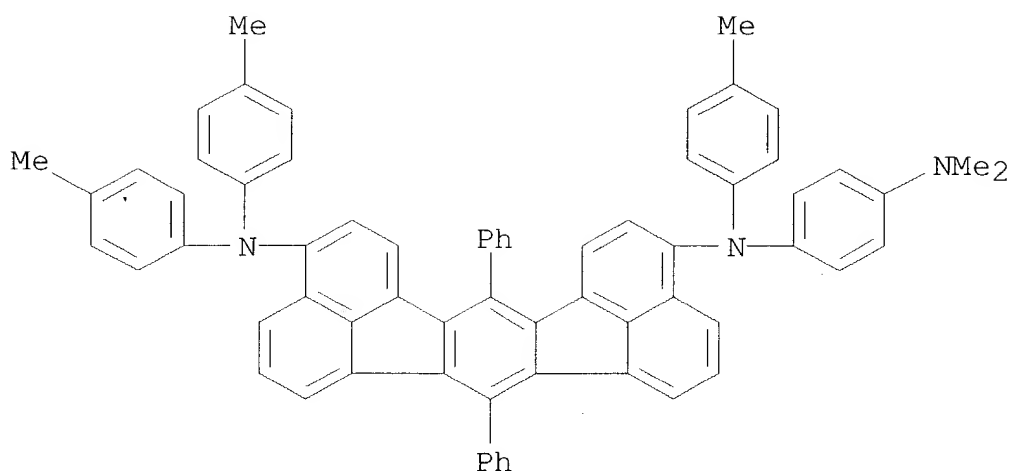
CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N'-tetrakis[4-(dimethylamino)phenyl]-7,14-diphenyl- (9CI) (CA INDEX NAME)



IT 502182-89-0 502182-90-3  
 (novel arom. diamine compd. for org. electroluminescent element)  
 RN 502182-89-0 HCA  
 CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N-[4-(dimethylamino)phenyl]-N,N',N'-tris(4-methylphenyl)-7,14-diphenyl-  
 (9CI) (CA INDEX NAME)



RN 502182-90-3 HCA  
 CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N-[4-(dimethylamino)phenyl]-N,N',N'-tris(4-methylphenyl)-7,14-diphenyl-  
 (9CI) (CA INDEX NAME)



IT 502182-87-8P 502182-88-9P

(novel arom. diamine compd. for org. electroluminescent element)

IT 502182-89-0 502182-90-3

(novel arom. diamine compd. for org. electroluminescent element)

L18 ANSWER 3 OF 3 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 134:273348 HCA

TITLE: Organic electroluminescent device

INVENTOR(S): Tagami, Sanae; Ikeda, Hidetsugu; Hosokawa, Chishio; Arakane, Takashi

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 77 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO.  | DATE       |
|---|------|----------|------------------|------------|
| WO 2001023497   | A1   | 20010405 | WO 2000-JP6658   | 20000927   |
| W: CN, IN, JP, KR   |      |          |                  |            |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE                |      |          |                  |            |
| EP 1138745  | A1   | 20011004 | EP 2000-962882   | 20000927   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO |      |          |                  |            |
| TW 490990   | B    | 20020611 | TW 2000-89120282 | 20000929   |
| US 2003054200   | A1   | 20030320 | US 2002-244164   | 20020916   |
| PRIORITY APPLN. INFO.:  |      |          |                  |            |
|   |      |          | JP 1999-279462   | A 19990930 |
|   |      |          | WO 2000-JP6658   | W 20000927 |

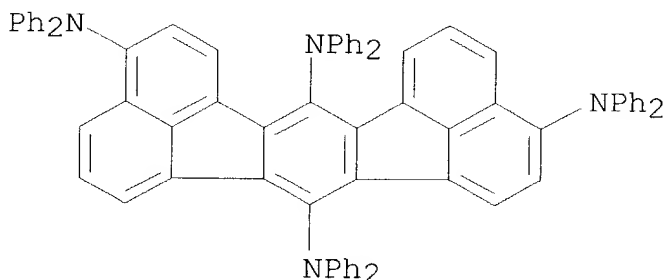
US 2000-675201 A3 20000929

AB The invention refers to an org. electroluminescent device contg. a compd. with a fluoranthan skeleton and at least one substituted amine or alkenyl.

IT **331965-30-1**  
(org. electroluminescent device)

RN 331965-30-1 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,7,10,14-tetramine,  
N,N,N',N',N'',N'',N''',N''''-octaphenyl- (9CI) (CA INDEX NAME)



IT **331965-30-1**  
(org. electroluminescent device)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

=> d(119)1-9 cbib abs hitstr hitind  
*(structures may not match that well)*

L19 ANSWER 1 OF 9 HCA COPYRIGHT 2004 ACS on STN

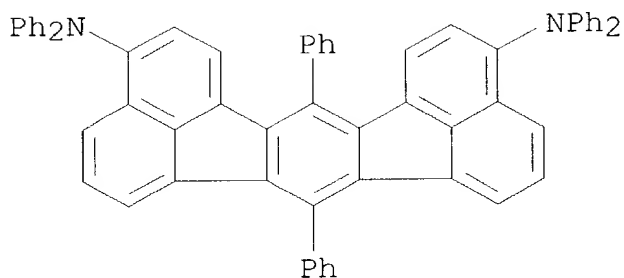
139:283101 White organic **electroluminescent** device. Fukuoka,  
Kenichi; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd., Japan). Jpn.  
Kokai Tokkyo Koho JP 2003272857 A2 20030926, 16 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 2002-76619 20020319.

AB The invention refers to a white **electroluminescent** device  
comprising a blue luminescent layer and a yellow-red luminescent  
layer, wherein the blue luminescent layer is placed closer to the  
anode in order to counteract the tendency of the device toward the  
red color so that the yellow-red luminescent layer may be made  
thicker without affecting the color of the light.

IT **364765-18-4**  
(white org. **electroluminescent** device)

RN 364765-18-4 HCA

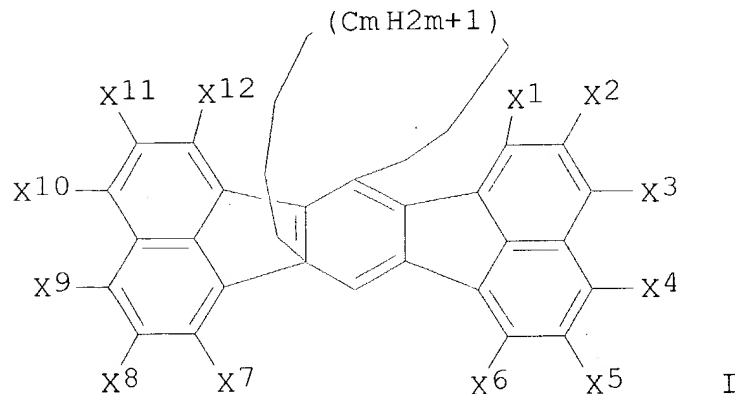
CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N',7,14-  
hexaphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST white **electroluminescent** device styryl anthracene  
IT **Electroluminescent** devices  
(white org. **electroluminescent** device)  
IT 186412-15-7 279672-58-1 **364765-18-4**  
(white org. **electroluminescent** device)

L19 ANSWER 2 OF 9 HCA COPYRIGHT 2004 ACS on STN  
138:346228 Organic **electroluminescent** component comprising acenaphtho fluoranthene. Nakatsuka, Masakatsu; Shimamura, Takehiko; Ishida, Tsutomu; Tanabe, Yoshimitsu; Totani, Yoshiyuki (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2003123978 A2 20030425, 20 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-312528 20011010.

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AB The invention refers to an **electroluminescent** component comprising a 7,14-alkano-acenaphtho[1,2-k]fluoranthene I [ $m = 2 -$

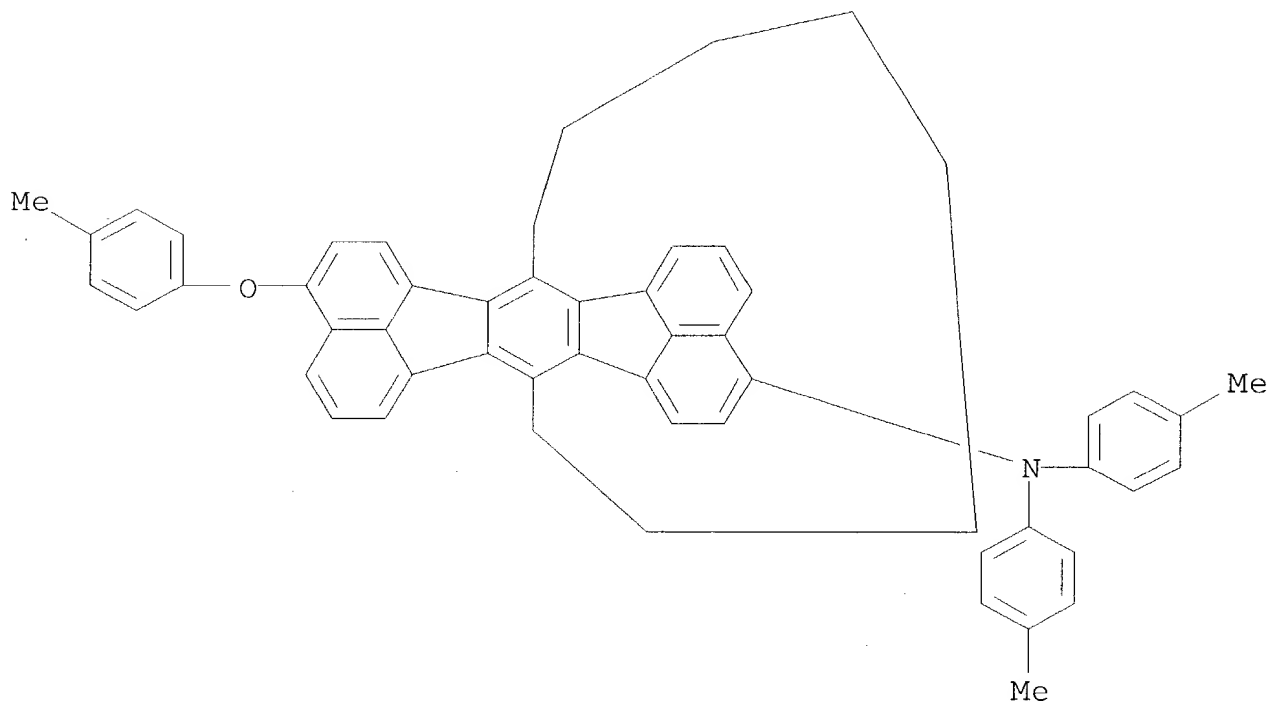
20; X1-12 = H, halo, straight chain or branched or ring alkyl, alkoxy; (un)substituted aryl, aryloxy or amino, where adjacent groups may join together and aliph. rings].

IT 515844-31-2 515844-35-6 515844-36-7  
515844-37-8 515844-39-0 515844-40-3  
515844-45-8 515844-46-9 515844-47-0  
515844-48-1

(org. **electroluminescent** component comprising acenaphtho fluoranthene)

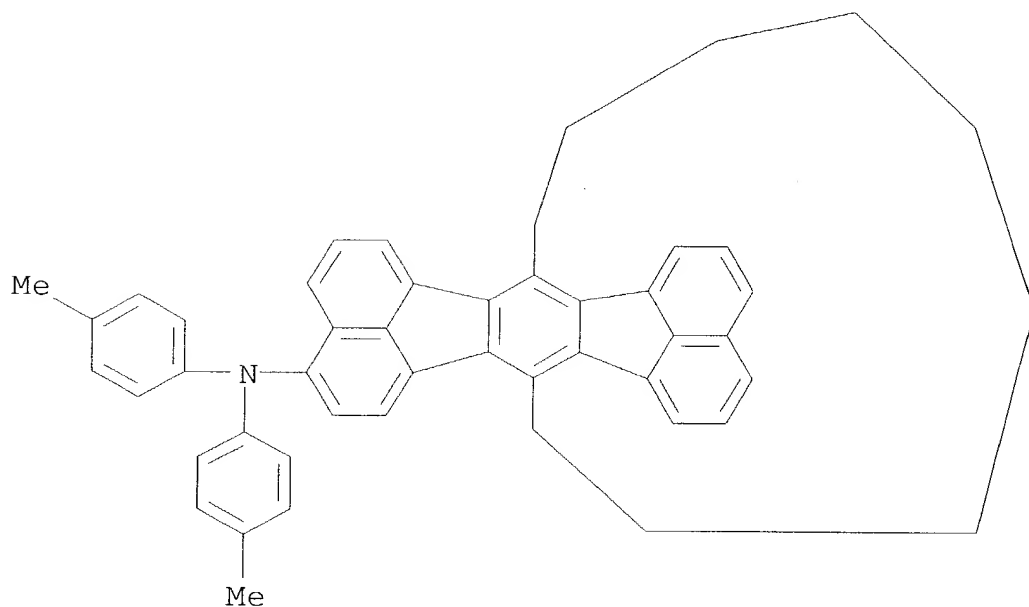
RN 515844-31-2 HCA

CN 7,14-Octanoacenaphtho[1,2-k]fluoranthene-3-amine,  
10-(4-methylphenoxy)-N,N-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

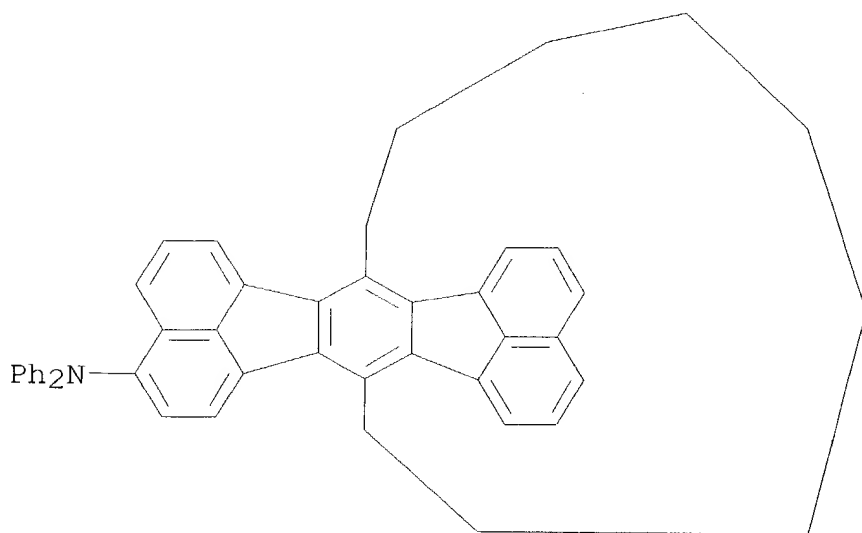


RN 515844-35-6 HCA

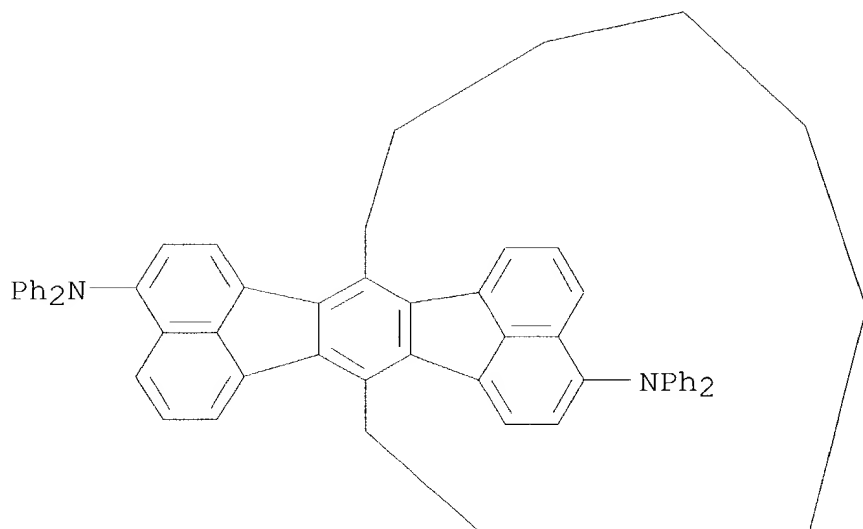
CN 7,14-Nonanoacenaphtho[1,2-k]fluoranthene-3-amine,  
N,N-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 515844-36-7 HCA  
 CN 7,14-Nonanoacenaphtho[1,2-k]fluoranthene-3-amine, N,N-diphenyl- (9CI)  
 (CA INDEX NAME)

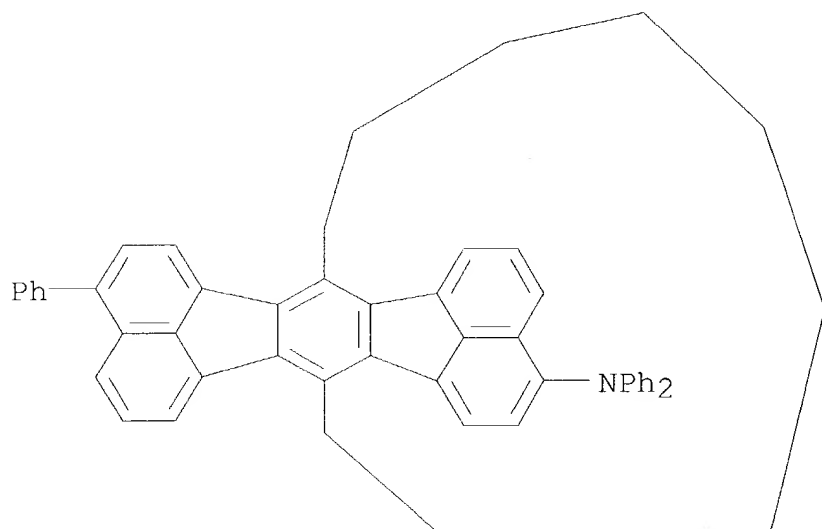


RN 515844-37-8 HCA  
 CN 7,14-Nonanoacenaphtho[1,2-k]fluoranthene-3,10-diamine,  
 N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



RN 515844-39-0 HCA

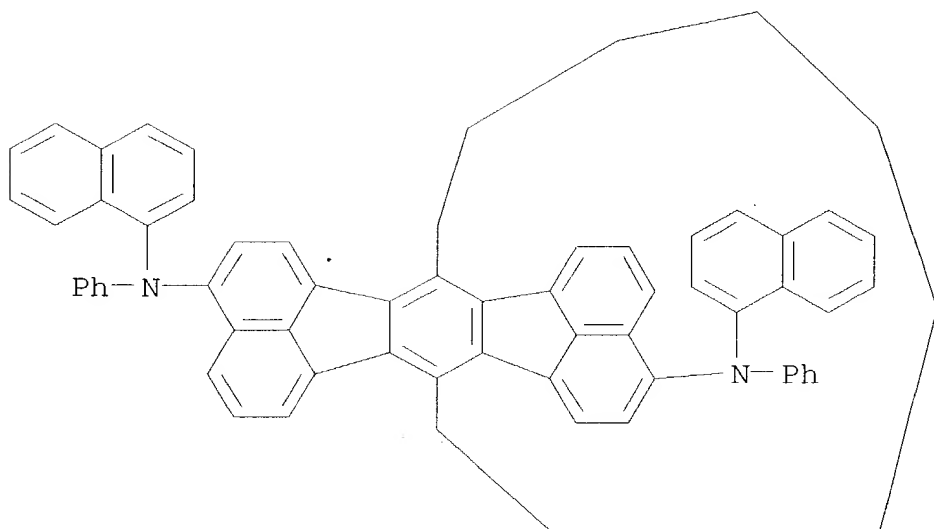
CN 7,14-Nonanoacenaphtho[1,2-k]fluoranthene-3-amine, N,N,10-triphenyl-  
(9CI) (CA INDEX NAME)



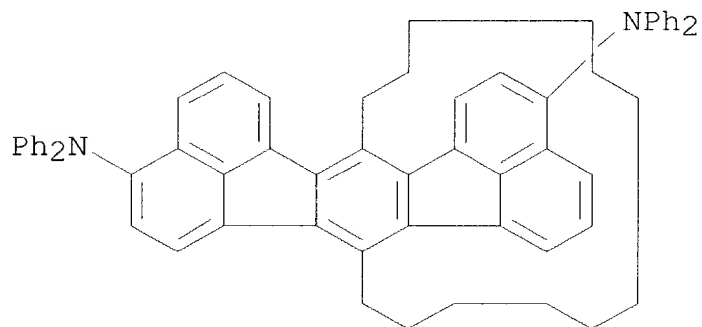
RN 515844-40-3 HCA

CN 7,14-Nonanoacenaphtho[1,2-k]fluoranthene-3,10-diamine,  
N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

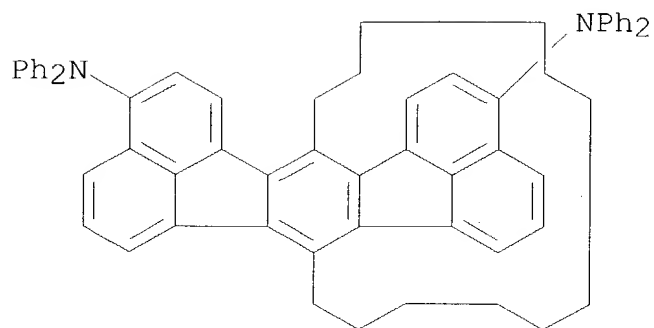




RN 515844-45-8 HCA  
 CN 7,14-Dodecanoacenaphtho[1,2-k]fluoranthene-3,10-diamine,  
 N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)

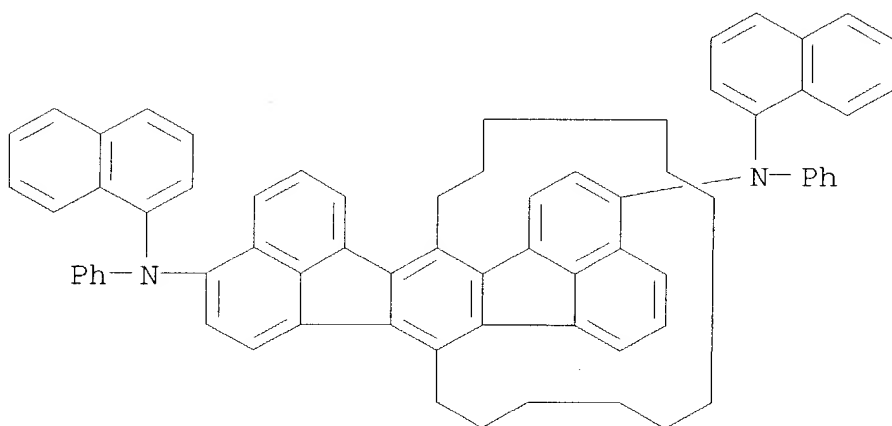


RN 515844-46-9 HCA  
 CN 7,14-Dodecanoacenaphtho[1,2-k]fluoranthene-3,11-diamine,  
 N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



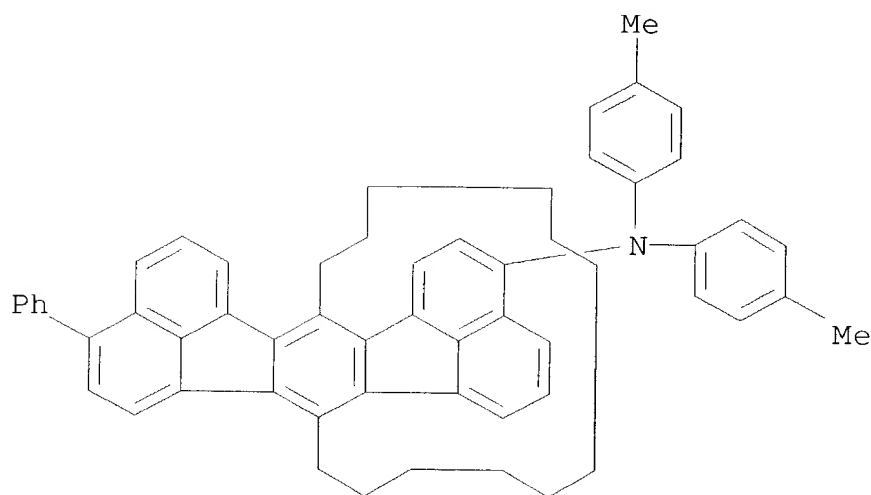
RN 515844-47-0 HCA

CN 7,14-Dodecanoacenaphtho[1,2-k]fluoranthene-3,10-diamine,  
N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 515844-48-1 HCA

CN 7,14-Dodecanoacenaphtho[1,2-k]fluoranthene-3-amine,  
N,N-bis(4-methylphenyl)-10-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST **electroluminescent** device acenaphtho fluoranthene  
IT **Electroluminescent** devices  
(org. **electroluminescent** component comprising acenaphtho fluoranthene)  
IT 155732-82-4, 7,14-Dodecanoacenaphtho[1,2-k]fluoranthene  
515844-28-7 515844-29-8 515844-30-1 **515844-31-2**  
515844-32-3, 7,14-Nonanoacenaphtho[1,2-k]fluoranthene 515844-33-4  
515844-34-5 **515844-35-6 515844-36-7**  
**515844-37-8** 515844-38-9 **515844-39-0**  
**515844-40-3** 515844-41-4 515844-42-5 515844-43-6  
515844-44-7 **515844-45-8 515844-46-9**  
**515844-47-0 515844-48-1** 515844-49-2  
515844-50-5

(org. **electroluminescent** component comprising acenaphtho fluoranthene)

L19 ANSWER 3 OF 9 HCA COPYRIGHT 2004 ACS on STN  
138:153317 Process for preparation of 7,14-diphenylacenaphtho[1,2-k]fluoranthene derivatives and use for making organic **electroluminescent** devices. Iwakuma, Toshihiro; Arakane, Takashi; Kusumoto, Tadashi (Petroleum Energy Center, Japan; Idemitsu Kosan Co., Ltd.). PCT Int. Appl. WO 2003010127 A1 20030206, 47 pp. DESIGNATED STATES: W: CN, IN, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2002-JP7103 20020712. PRIORITY: JP 2001-220946 20010723.

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

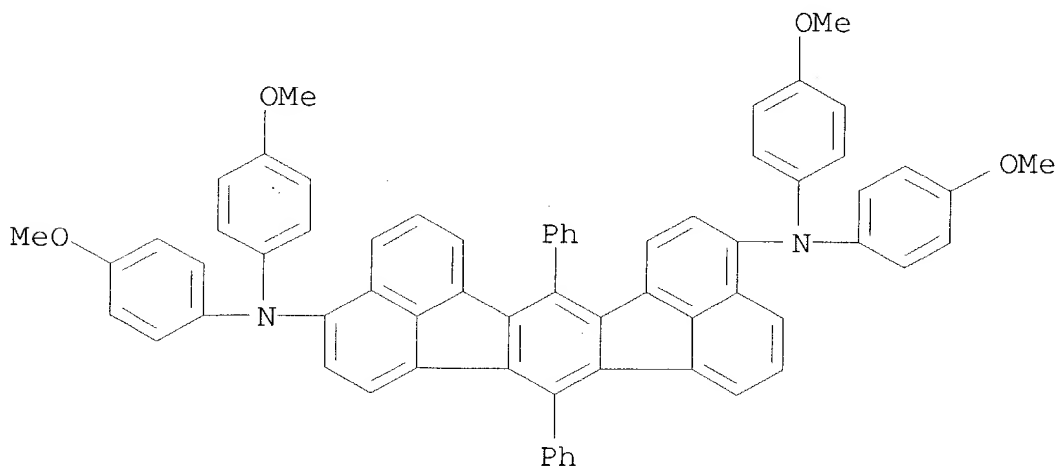
AB This invention pertains to prepn method of novel arom. compds. I and II [wherein X1 - X20 = independently H, alkyl, or alkoxy], and use for making red-emitting org. **electroluminescent** devices, which have high color purity and long life and exhibit high luminous brightness and luminous efficiency even when a low voltage is impressed. For example, the target compd. III and IV were prepd. by coupling reaction of the corresponding dibromides and bis(4-methoxyphenyl)amine in MePh in the presence of tris(dibenzylideneacetone)dipalladium, (S)-(-)-BINAP, and t-BuONa (82%).

IT 494834-14-9P 494834-15-0P 494834-16-1P  
494834-17-2P 494834-18-3P 494834-19-4P  
494834-20-7P 494834-21-8P

(prepn. of diphenylacenaphthofluoranthene derivs. by coupling reaction of arom. bromides with amines)

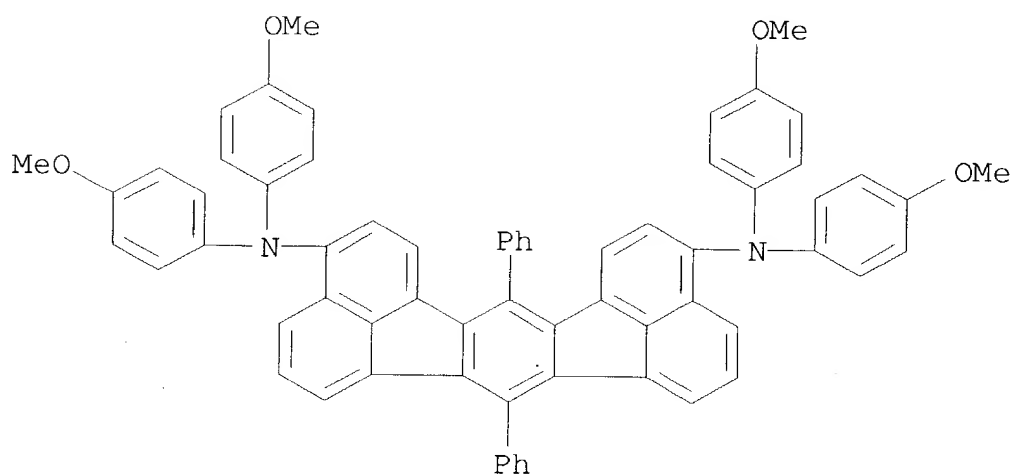
RN 494834-14-9 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N,N',N'-tetrakis(4-methoxyphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME)



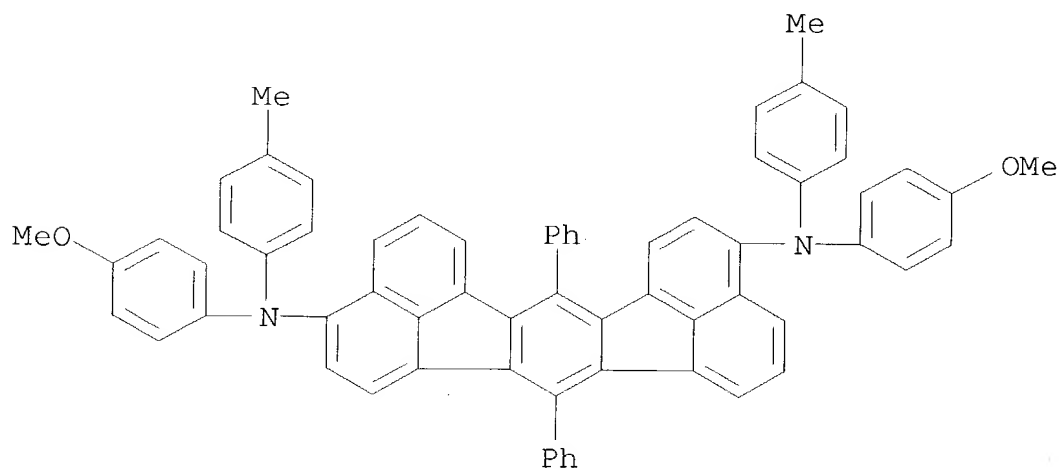
RN 494834-15-0 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N'-tetrakis(4-methoxyphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME)



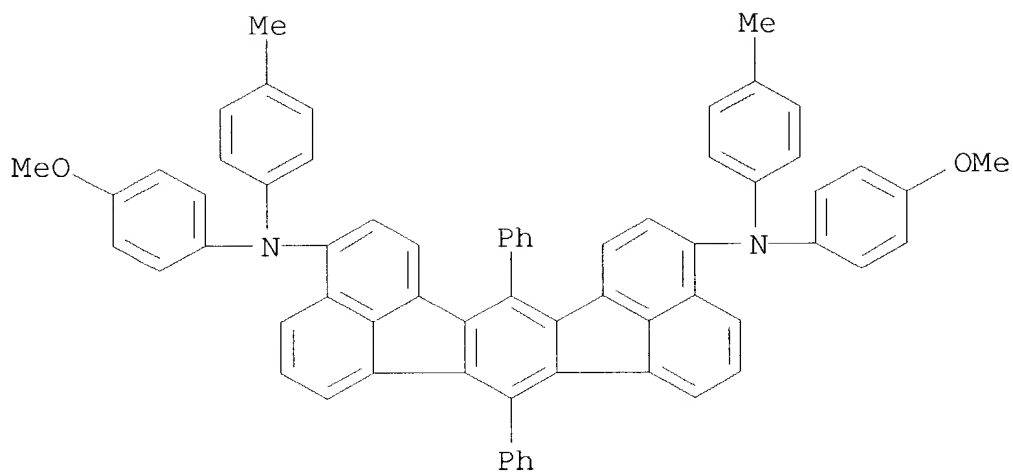
RN 494834-16-1 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N'-bis(4-methoxyphenyl)-N,N'-bis(4-methylphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME)

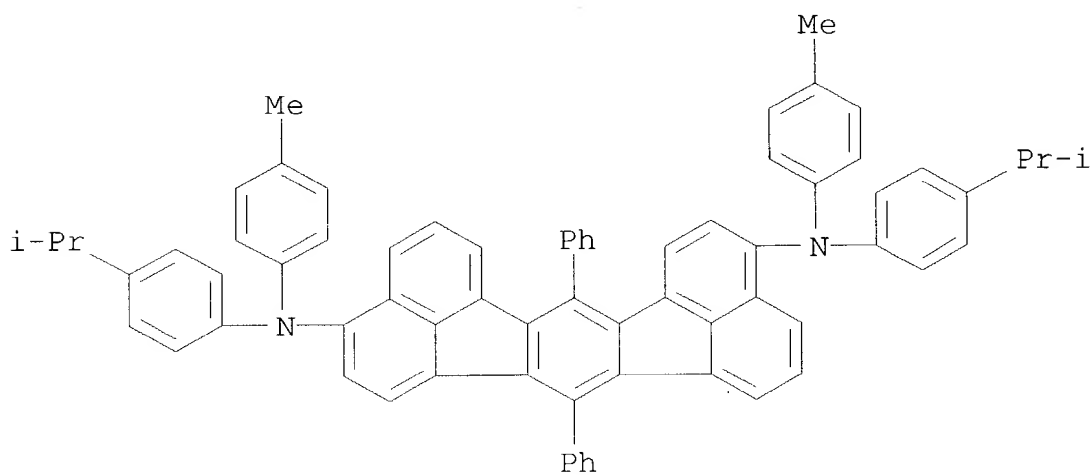


RN 494834-17-2 HCA

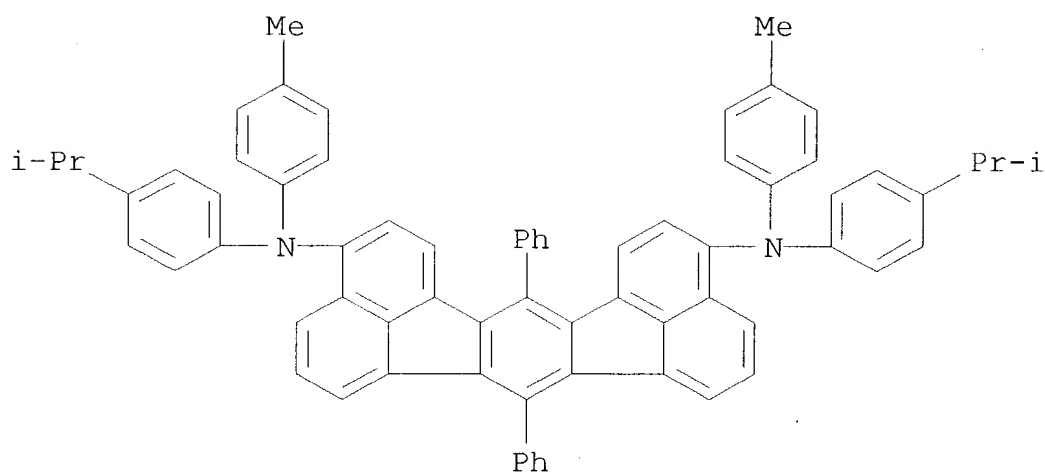
CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N'-bis(4-methoxyphenyl)-N,N'-bis(4-methylphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME)



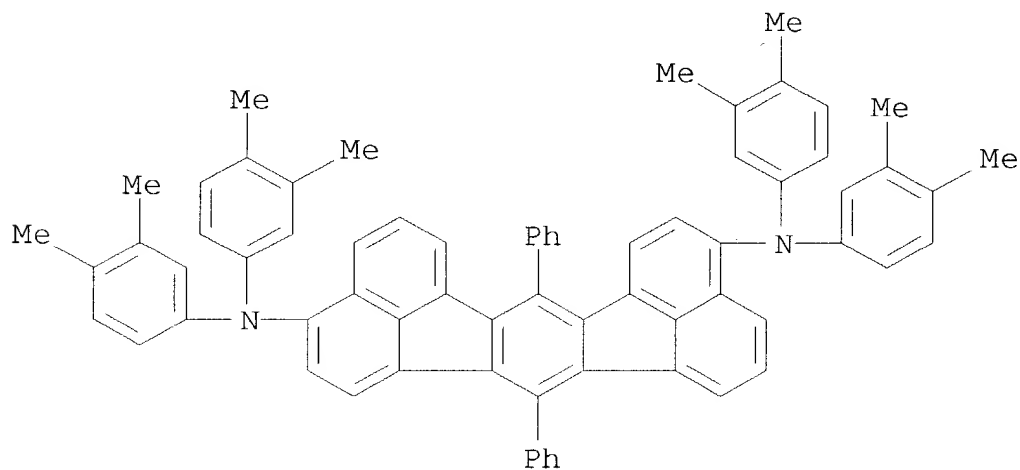
RN 494834-18-3 HCA  
 CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N'-bis(4-methylphenyl)-  
 N,N'-bis[4-(1-methylethyl)phenyl]-7,14-diphenyl- (9CI) (CA INDEX  
 NAME)



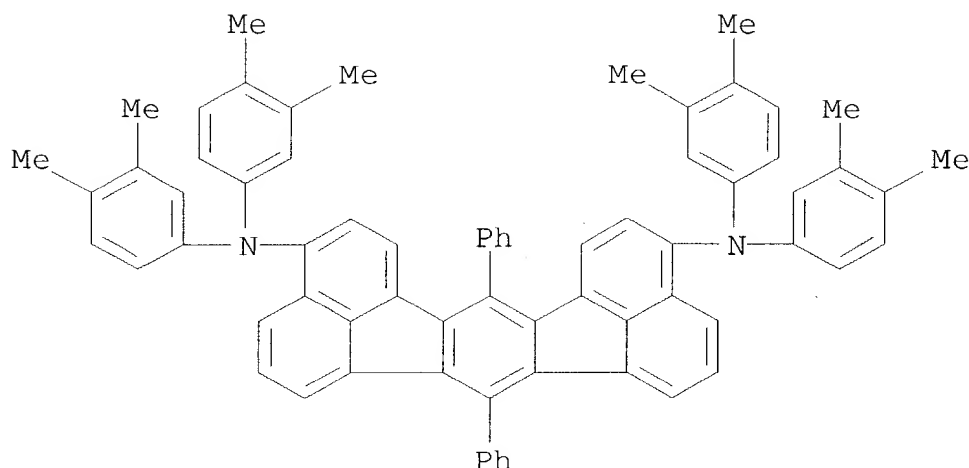
RN 494834-19-4 HCA  
 CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N'-bis(4-methylphenyl)-  
 N,N'-bis[4-(1-methylethyl)phenyl]-7,14-diphenyl- (9CI) (CA INDEX  
 NAME)



|    |   |     |
|----|---|-----|
| RN | 494834-20-7   | HCA |
| CN | Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N,N',N'-tetrakis(3,4-dimethylphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME) |     |



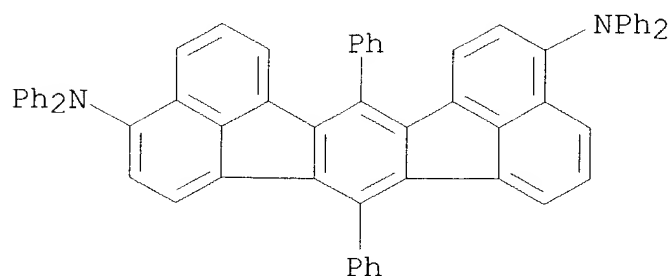
|    |   |     |
|----|---|-----|
| RN | 494834-21-8   | HCA |
| CN | Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N'-tetrakis(3,4-dimethylphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME) |     |



- IC ICM C07C211-61  
ICS C07C217-92; C09K011-06; H05B033-14; H05B033-22
- CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
- ST prepn phenyl amino acenaphthofluoranthene org  
**electroluminescent** device
- IT 494834-14-9P 494834-15-0P 494834-16-1P  
494834-17-2P 494834-18-3P 494834-19-4P  
494834-20-7P 494834-21-8P  
(prepn. of diphenylacenaphthofluoranthene derivs. by coupling  
reaction of arom. bromides with amines)
- L19 ANSWER 4 OF 9 HCA COPYRIGHT 2004 ACS on STN  
137:70373 Organic **electroluminescent** device. Arakane,  
Takashi; Fukuoka, Kenichi; Hosokawa, Chishio (Idemitsu Kosan Co.,  
Ltd., Japan). PCT Int. Appl. WO 2002052904 A1 20020704, 48 pp.  
DESIGNATED STATES: W: CN, IN, KR; RW: AT, BE, CH, CY, DE, DK, ES,  
FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN:  
PIXXD2. APPLICATION: WO 2001-JP10789 20011210. PRIORITY: JP  
2000-394152 20001226.
- AB The invention refers to an **electroluminescent** device  
wherein the luminescent layer contains at least one hole transport  
material and at least one electron transport material, and the  
energy gap of the hole transport material is less than the energy  
gap of the electron transport material, and the ionization energy of  
the hole transport material is less than or equal to the ionization  
energy of the electron transport material, in order to provide a  
high-efficiency device with long life.
- IT 331965-27-6 364765-18-4  
(org. **electroluminescence** device)
- RN 331965-27-6 HCA
- CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N,N',N',7,14-

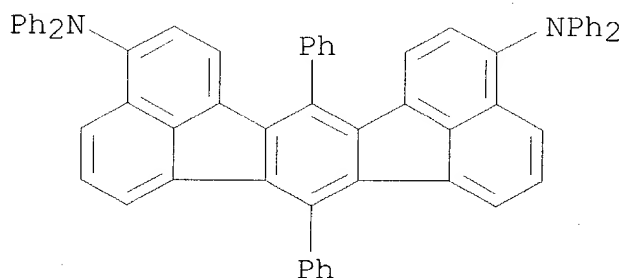


hexaphenyl- (9CI) (CA INDEX NAME)



RN 364765-18-4 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N',7,14-hexaphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS H05B033-22; C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent** device energy gap hole electron transport ionization energy

IT Electron transport

Hole transport

(material; org. **electroluminescence** device)

IT Band gap

**Electroluminescent** devices

Ionization potential

(org. **electroluminescence** device)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolino) 205930-46-7

**331965-27-6 364765-18-4**(org. **electroluminescence** device)

L19 ANSWER 5 OF 9 HCA COPYRIGHT 2004 ACS on STN

136:224030 Organic **electroluminescent** element. Arakane, Takashi; Fukuoka, Kenichi; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2002020693 A1 20020314, 44 pp. DESIGNATED STATES: W: CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK,

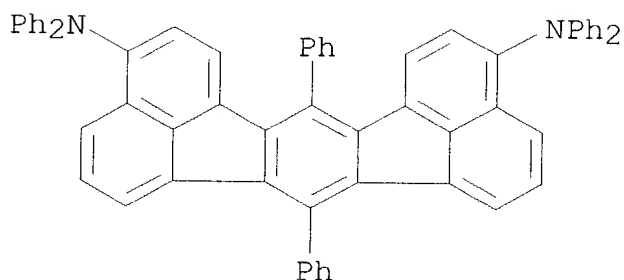
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese).  
CODEN: PIXXD2. APPLICATION: WO 2001-JP7729 20010906. PRIORITY: JP  
2000-271707 20000907.

AB The invention refers to an org. **electroluminescent** element comprising an anode layer, an **org. luminescent** layer, an inorg. compd. layer (or a layer contg. a reducible dopant), and a cathode layer, wherein the **org. luminescent** layer comprises an arom. amine compd. [Ar1Ar2N]pA, and/or an arom. amine compd. [Ar3Ar4N]qB[NAr5Ar6]r [A, B, Ar1-6 = C6-60 arom. contg. neither styryl nor alkenyl; and at least one of A, Ar1, Ar2 or one of B, Ar3-6 comprises a fused arom. ring with three or more rings; p, q, r = 1 - 6].

IT 364765-18-4 402824-81-1 402824-82-2  
(org. **electroluminescent** element)

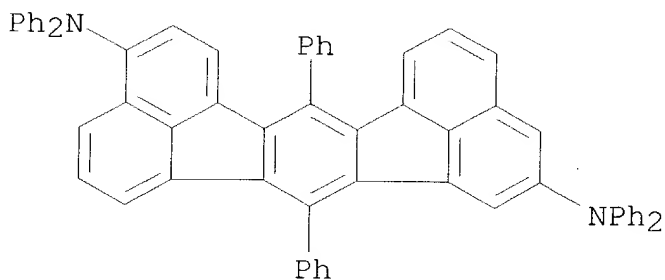
RN 364765-18-4 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N',7,14-hexaphenyl- (9CI) (CA INDEX NAME)



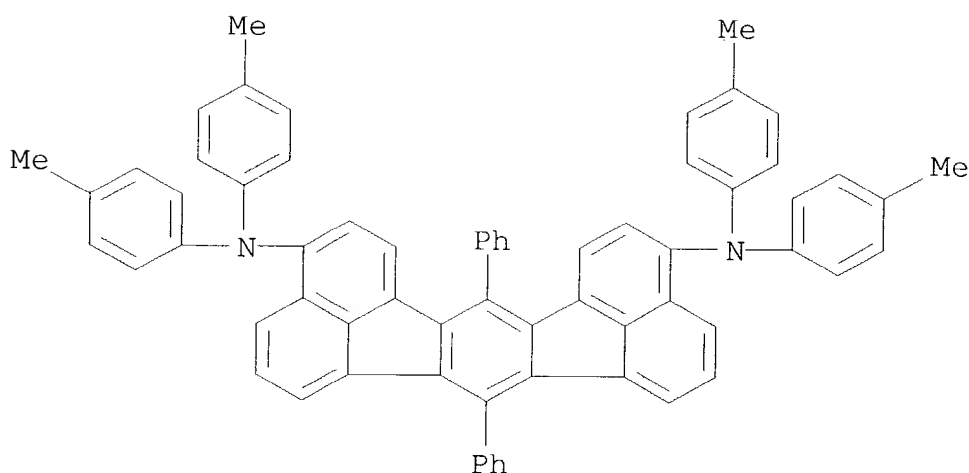
RN 402824-81-1 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,9-diamine, N,N,N',N',7,14-hexaphenyl- (9CI) (CA INDEX NAME)



RN 402824-82-2 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N'-tetrakis(4-methylphenyl)-7,14-diphenyl- (9CI) (CA INDEX NAME)



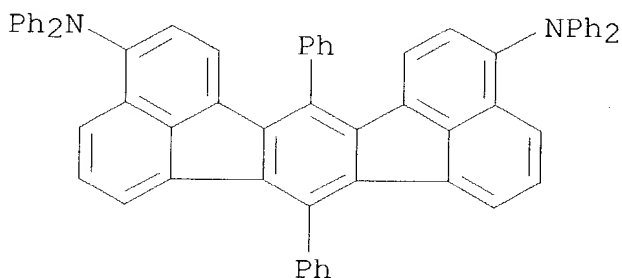
IC ICM C09K011-06  
 ICS H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST **electroluminescent** device amine arom  
 IT **Electroluminescent** devices  
 (org. **electroluminescent** element)  
 IT 7789-24-4, Lithium fluoride, uses 22441-13-0, Lithium mono(2,2,6,6-tetramethyl-3,5-heptanedionato) 177799-16-5  
 194296-06-5 227009-37-2 247575-24-2 249288-60-6  
**364765-18-4 402824-81-1 402824-82-2**  
 402824-83-3 402824-84-4 402824-85-5 402824-86-6  
 (org. **electroluminescent** element)

L19 ANSWER 6 OF 9 HCA COPYRIGHT 2004 ACS on STN  
 135:296018 Organic **electroluminescence** device and organic luminescent medium. Fukuoka, Kenichi; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd., Japan). PCT Int. Appl. WO 2001076323 A1 20011011, 60 pp. DESIGNATED STATES: W: CN, IN, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP2587 20010328. PRIORITY: JP 2000-93976 20000330.  
 AB The invention relates to an org. **electroluminescence** device having a pair of electrodes and an **org. luminescent** medium layer held between them, wherein the **org. luminescent** medium layer at least contains an electron-transporting compd. and an anthracene deriv. of a specific structure, and has excellent heat resistance, long life, and the efficiency of luminescence is high. An **org. luminescent** medium preferably used for such an **electroluminescence** device is also disclosed.

IT 364765-18-4

(org. **electroluminescence** device having org.  
**luminescent** medium layer of)

RN 364765-18-4 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,11-diamine, N,N,N',N',7,14-  
hexaphenyl- (9CI) (CA INDEX NAME)

IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)ST Org **electroluminescence** device anthracene derivIT **Electroluminescent** devices(org.; **luminescent** medium layer of)

IT 2085-33-8, Alq3 14642-34-3 23102-67-2 122648-99-1

172285-72-2 172285-82-4 186412-15-7 249512-71-8 331856-47-4

364765-14-0 364765-16-2 **364765-18-4**(org. **electroluminescence** device having org.  
**luminescent** medium layer of)

L19 ANSWER 7 OF 9 HCA COPYRIGHT 2004 ACS on STN

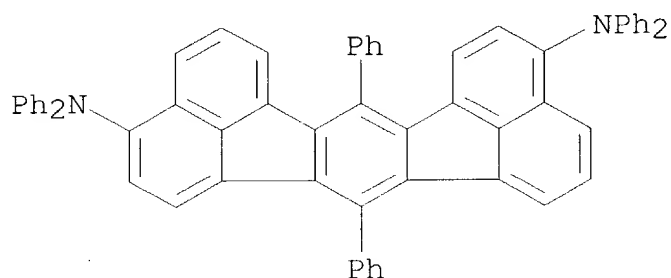
135:84101 White organic **electroluminescence** element. Fukuoka,  
Kenichi; Tagami, Sanae; Hosokawa, Chishio (Idemitsu Kosan Co., Ltd.,  
Japan). PCT Int. Appl. WO 2001048116 A1 20010705, 39 pp.DESIGNATED STATES: W: CN, IN, KR; RW: AT, BE, CH, CY, DE, DK, ES,  
FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN:  
PIXXD2. APPLICATION: WO 2000-JP9227 20001226. PRIORITY: JP  
1999-372514 19991228; JP 2000-328726 20001027.AB The invention refers to a white org. **electroluminescence**  
element comprising a pair of electrodes, and a luminescent layer,  
wherein the luminescent layer contains a blue luminescent material  
and a fluorescent compd. within at least one fluoranthene skeleton,  
pentacene skeleton or perylene skeleton. The  
**electroluminescence** element **emits** a white  
**light**, exhibits high luminescence efficiency and has a long  
life, and thus has satisfactory performance capabilities for  
practical use.

IT 331965-27-6

(white org. **electroluminescence** element)

RN 331965-27-6 HCA

CN Acenaphtho[1,2-k]fluoranthene-3,10-diamine, N,N,N',N',7,14-hexaphenyl- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescence** device

IT **Electroluminescent** devices

(white org. **electroluminescence** element)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 50926-11-9, ITO 55035-42-2 65181-78-4, TPD 123847-85-8,  $\alpha$ -NPD 142289-08-5 331856-47-4 **331965-27-6**

(white org. **electroluminescence** element)

L19 ANSWER 8 OF 9 HCA COPYRIGHT 2004 ACS on STN

132:130074 Organic **electroluminescence** device having 3,3'-biacenaphtho[1,2- $\kappa$ ]fluoranthene derivative. Nakatsuka, Masakatsu; Kitamoto, Noriko (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2000026325 A2 20000125, 100 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-194430 19980709.

AB The org. **electroluminescence** device has a layer contg. 3,3'-biacenaphtho[1,2- $\kappa$ ]fluoranthene deriv. between a pair of electrodes. The org. **electroluminescence** device provides the bright luminescence.

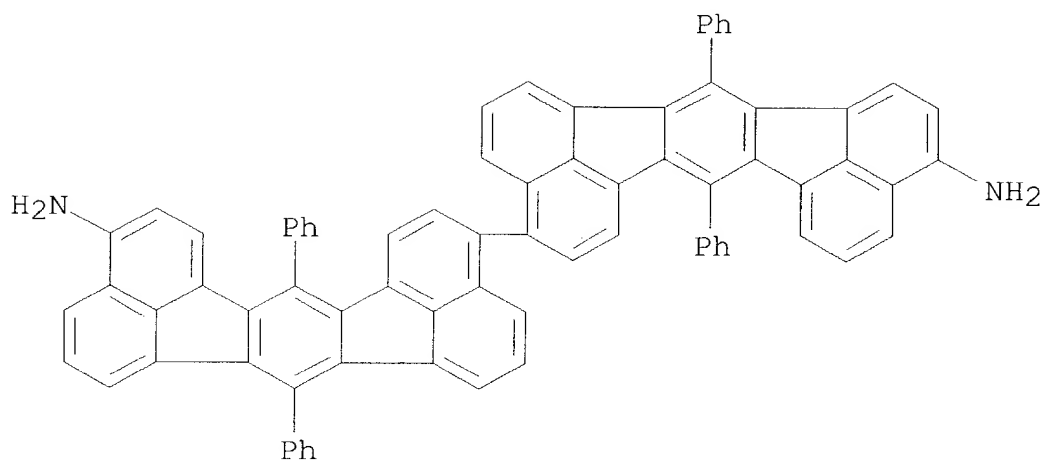
IT **256328-53-7P 256328-54-8P 256328-55-9P 256328-56-0P**

(org. **electroluminescence** device having

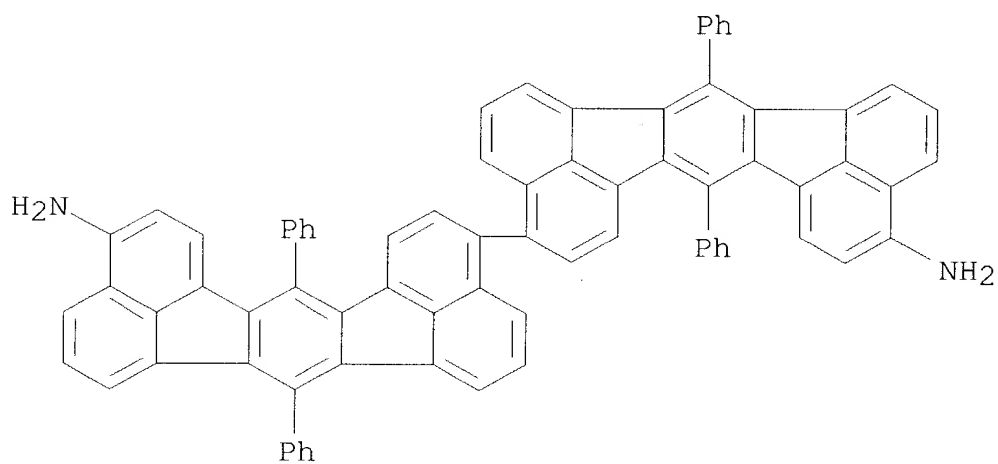
3,3'-biacenaphtho[1,2- $\kappa$ ]fluoranthene deriv.)

RN 256328-53-7 HCA

CN [3,3'-Biacenaphtho[1,2- $\kappa$ ]fluoranthene]-10,11'-diamine, 7,7',14,14'-tetraphenyl- (9CI) (CA INDEX NAME)

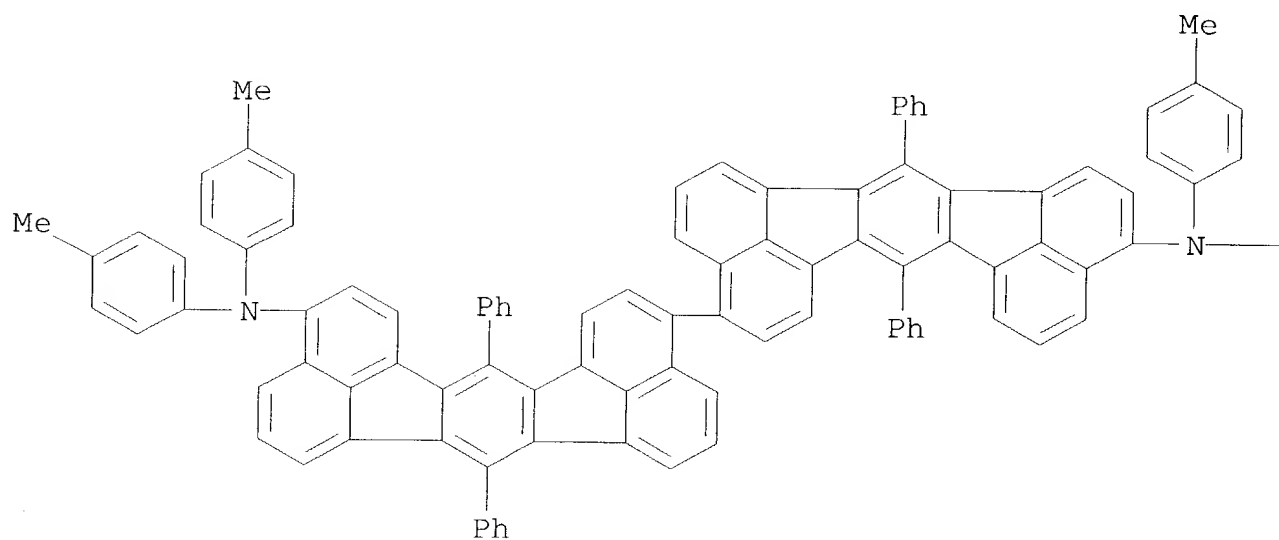


RN 256328-54-8 HCA  
 CN [3,3'-Biacenaphtho[1,2-k]fluoranthene]-11,11'-diamine,  
 7,7',14,14'-tetraphenyl- (9CI) (CA INDEX NAME)

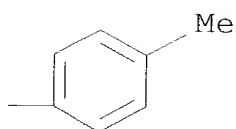


RN 256328-55-9 HCA  
 CN [3,3'-Biacenaphtho[1,2-k]fluoranthene]-10,11'-diamine,  
 N,N,N',N'-tetrakis(4-methylphenyl)-7,7',14,14'-tetraphenyl- (9CI)  
 (CA INDEX NAME)

PAGE 1-A

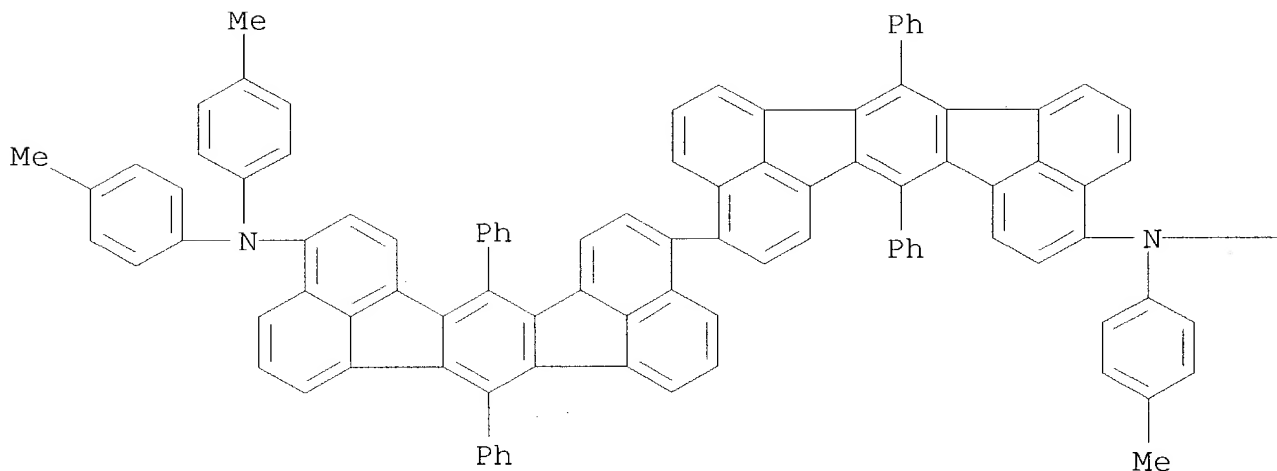


PAGE 1-B

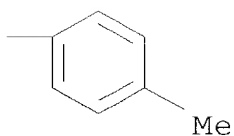


RN 256328-56-0 HCA  
 CN [3,3'-Biacenaphtho[1,2-k]fluoranthene]-11,11'-diamine,  
 N,N,N',N'-tetrakis(4-methylphenyl)-7,7',14,14'-tetraphenyl- (9CI)  
 (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



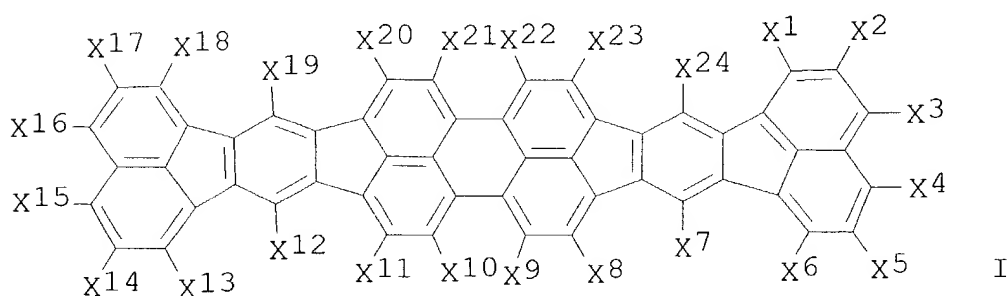
IC ICM C07C013-62  
 ICS C07C022-04; C07C025-22; C07C025-24; C07C033-36; C07C039-12;  
 C07C043-168; C07C043-20; C07C047-546; C07C049-792; C07C063-46;  
 C07C069-33; C07C069-76; C07C205-11; C07C211-50; C07C233-65;  
 C07C255-52; C07C321-28; C09K011-06; H05B033-14  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 24, 73  
 ST org **electroluminescence** device fluoranthene  
 IT **Electroluminescent** devices  
 (org. **electroluminescence** device having  
 3,3'-biacenaphtho[1,2-k]fluoranthene deriv.)



IT 256327-97-6P 256328-06-0P, 3,3'-Biacenaphtho[1,2-k]fluoranthene  
 256328-07-1P 256328-08-2P 256328-09-3P 256328-10-6P  
 256328-11-7P 256328-12-8P 256328-13-9P 256328-14-0P  
 256328-15-1P 256328-16-2P 256328-17-3P 256328-18-4P  
 256328-19-5P 256328-20-8P 256328-21-9P 256328-22-0P  
 256328-23-1P 256328-24-2P 256328-25-3P 256328-26-4P  
 256328-27-5P 256328-28-6P 256328-29-7P 256328-30-0P  
 256328-31-1P 256328-32-2P 256328-33-3P 256328-34-4P  
 256328-35-5P 256328-36-6P 256328-37-7P 256328-38-8P  
 256328-39-9P 256328-40-2P 256328-41-3P 256328-42-4P  
 256328-43-5P 256328-44-6P 256328-45-7P 256328-46-8P  
 256328-47-9P 256328-48-0P 256328-49-1P 256328-50-4P  
 256328-51-5P 256328-52-6P **256328-53-7P**  
**256328-54-8P 256328-55-9P 256328-56-0P**  
 256328-57-1P 256328-58-2P 256328-59-3P 256328-60-6P  
 256328-61-7P 256328-62-8P 256328-63-9P 256328-64-0P  
 (org. **electroluminescence** device having  
 3,3'-biacenaphtho[1,2-k]fluoranthene deriv.)  
 IT 624-31-7, 4-Iodotoluene 1310-58-3, Potassium hydroxide, reactions  
 10486-08-5, Sodium 4-Methylphenylthiolate 20607-43-6,  
 Isopropylmercaptan sodium salt 153390-84-2 256327-96-5  
 256327-98-7 256327-99-8 256328-00-4 256328-01-5 256328-02-6  
 256328-03-7 256328-04-8 256328-05-9  
 (org. **electroluminescence** device having  
 3,3'-biacenaphtho[1,2-k]fluoranthene deriv.)

L19 ANSWER 9 OF 9 HCA COPYRIGHT 2004 ACS on STN  
 132:129799 Perylene derivatives and high-luminance organic  
**electroluminescent** devices using them. Nakatsuka,  
 Masakatsu; Kitamoto, Noriko (Mitsui Chemicals Inc., Japan). Jpn.  
 Kokai Tokkyo Koho JP 2000026324 A2 20000125, 101 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 1998-187708 19980702.

GI



AB The devices have  $\geq 1$  layer(s) contg.

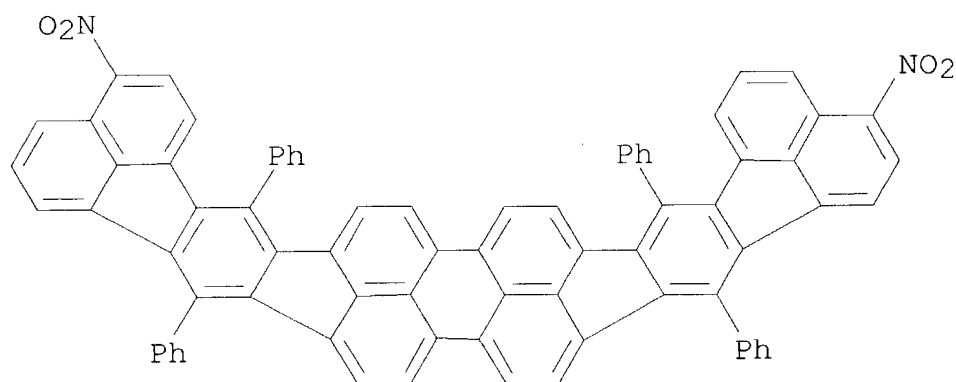
bisacenaphto[1',2':5,6]indeno[1,2,3-cd:1',2',3'-lm]perylene derivs. between a pair of electrodes. The derivs. comprise I {X1-X24 = H, halo, (un)substituted alkyl, alkoxy, alkylthio, alkenyl, alkenyloxy, alkenylthio, aralkyl, aralkyloxy, aralkylthio, aryl, aryloxy, arylthio, or amino, cyano, OH, NO<sub>2</sub>, CO<sub>2</sub>R<sub>1</sub>, COR<sub>2</sub>, OCOR<sub>3</sub>; R<sub>1</sub> = H, (un)substituted alkyl, alkenyl, aralkyl, aryl; R<sub>2</sub> = H, (un)substituted alkyl, alkenyl, aralkyl, or aryl, amino; R<sub>3</sub> = (un)substituted alkyl, alkenyl, aralkyl, or aryl; X1-X24 may form (un)substituted alicyclic group}.

IT 256333-50-3P 256333-51-4P 256333-52-5P  
256333-53-6P

(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)

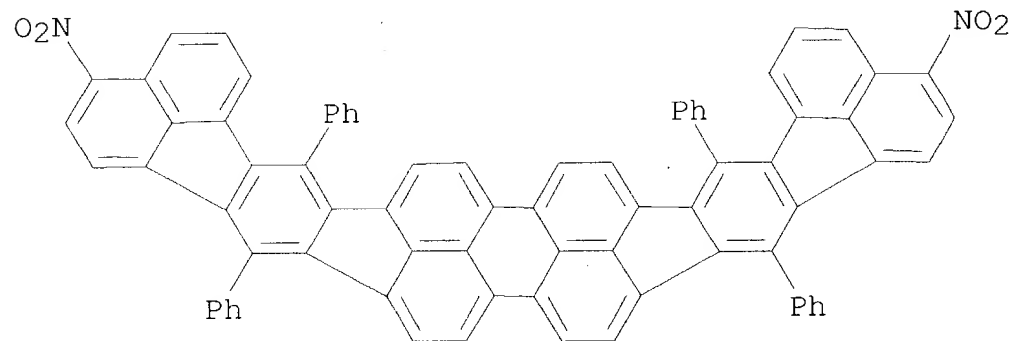
RN 256333-50-3 HCA

CN Bisnaphth[1',8':5,6,7]-s-indaceno[1,2,3-cd:1',2',3'-lm]perylene,  
1,13-dinitro-4,9,16,21-tetraphenyl- (9CI) (CA INDEX NAME)



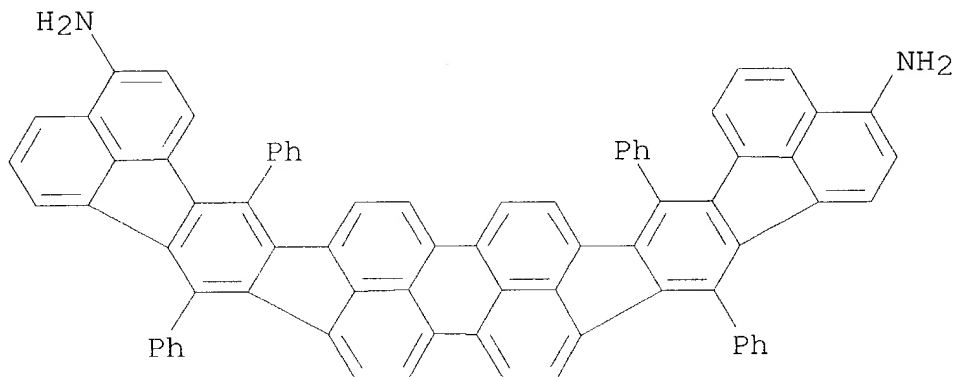
RN 256333-51-4 HCA

CN Bisnaphth[1',8':5,6,7]-s-indaceno[1,2,3-cd:1',2',3'-lm]perylene,  
1,12-dinitro-4,9,16,21-tetraphenyl- (9CI) (CA INDEX NAME)



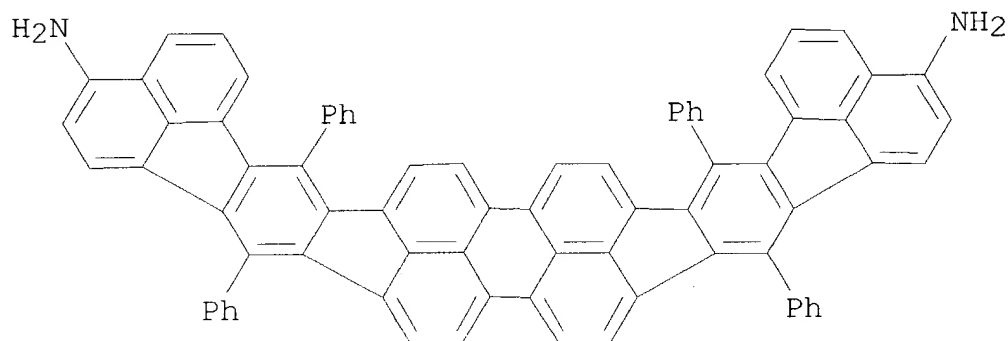
RN 256333-52-5 HCA

CN Bisnaphth[1',8':5,6,7]-s-indaceno[1,2,3-cd:1',2',3'-lm]perylene-1,13-diamine, 4,9,16,21-tetraphenyl- (9CI) (CA INDEX NAME)



RN 256333-53-6 HCA

CN Bisnaphth[1',8':5,6,7]-s-indaceno[1,2,3-cd:1',2',3'-lm]perylene-1,12-diamine, 4,9,16,21-tetraphenyl- (9CI) (CA INDEX NAME)

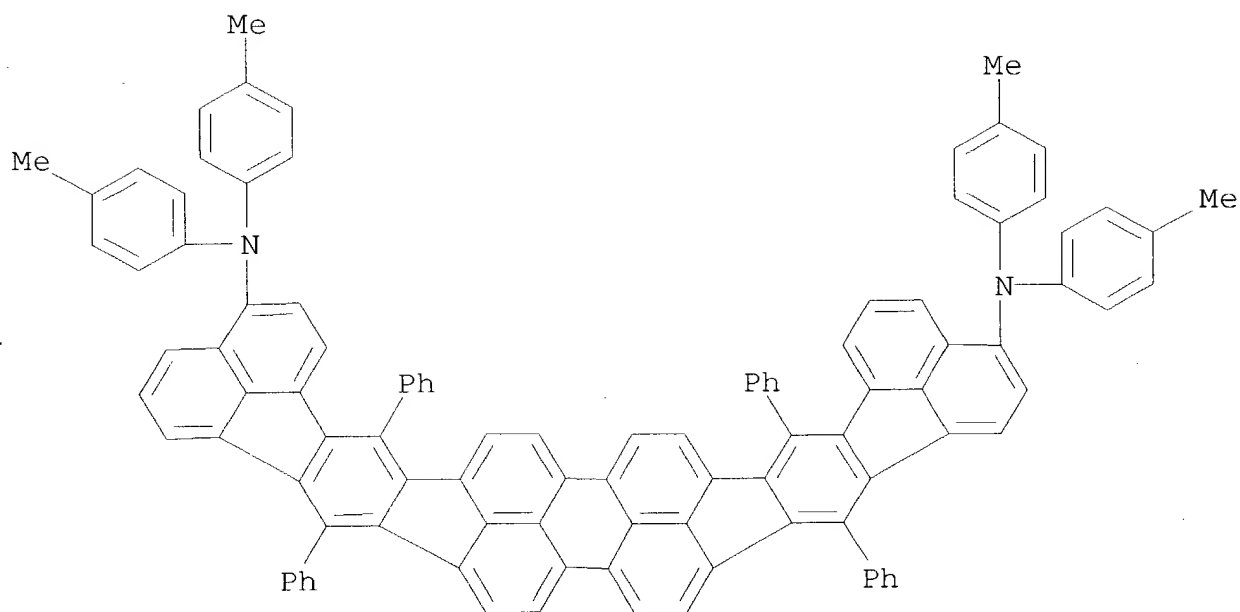


IT 256333-54-7P 256333-55-8P

(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)

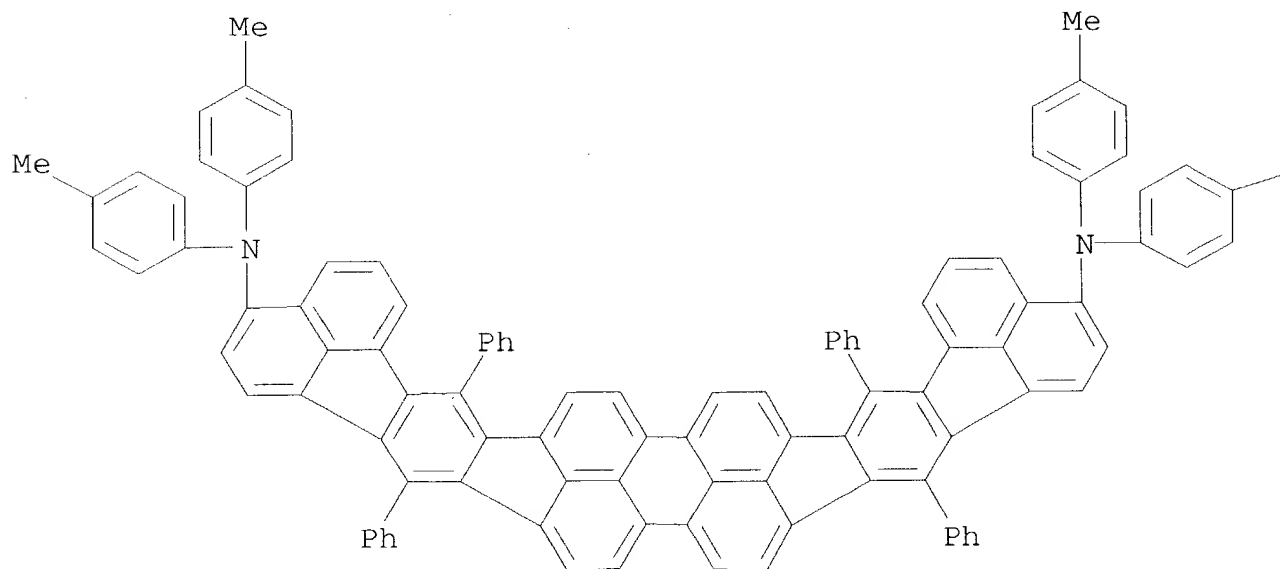
RN 256333-54-7 HCA

CN Bisnaphth[1',8':5,6,7]-s-indaceno[1,2,3-cd:1',2',3'-lm]perylene-1,13-diamine, N,N,N',N'-tetrakis(4-methylphenyl)-4,9,16,21-tetraphenyl- (9CI) (CA INDEX NAME)



RN 256333-55-8 HCA  
CN Bisnaphth[1',8':5,6,7]-s-indaceno[1,2,3-cd:1',2',3'-lm]perylene-1,12-diamine, N,N,N',N'-tetrakis(4-methylphenyl)-4,9,16,21-tetraphenyl- (9CI) (CA INDEX NAME)

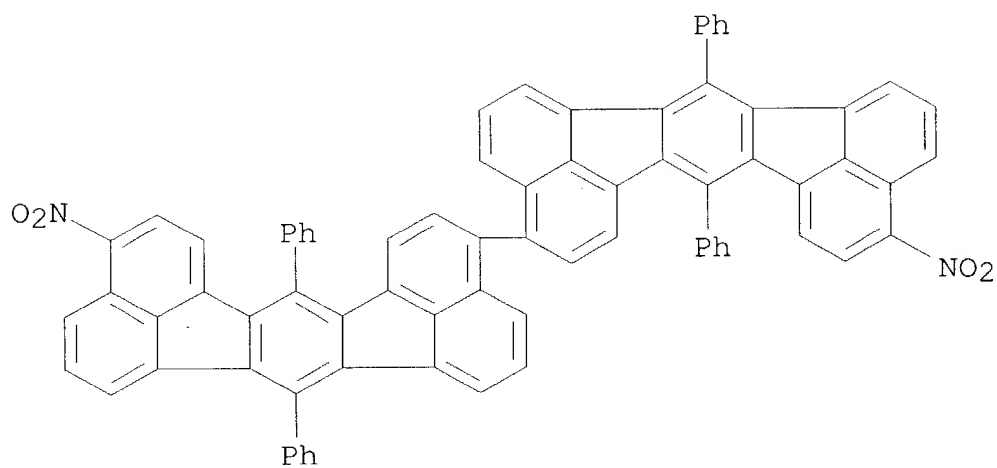
PAGE 1-A



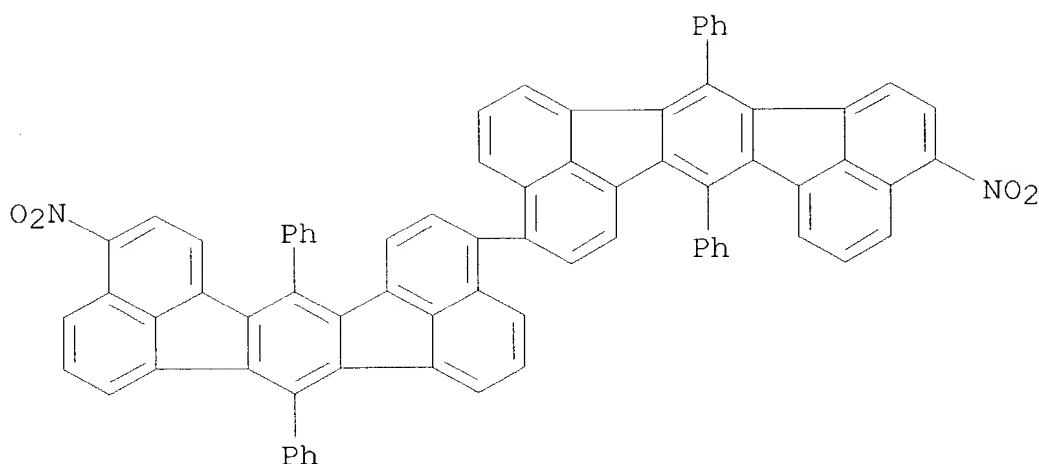
PAGE 1-B

Me

IT 256343-03-0 256343-07-4  
(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)  
RN 256343-03-0 HCA  
CN 3,3'-Biacenaphtho[1,2-k]fluoranthene, 11,11'-dinitro-7,7',14,14'-  
tetraphenyl- (9CI) (CA INDEX NAME)



RN 256343-07-4 HCA  
CN 3,3'-Biacenaphtho[1,2-k]fluoranthene, 10,11'-dinitro-7,7',14,14'-  
tetraphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C013-62  
 ICS C07C022-04; C07C025-22; C07C043-174; C07C043-21; C07C043-215;  
 C07C043-225; C07C043-275; C07C047-546; C07C063-49; C07C069-78;  
 C07C205-06; C07C211-50; C07C211-54; C07C255-52; C07C321-28;  
 C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 25

ST acenaphtho indeno perylene **electroluminescent** device;  
**luminance** improvement **org**  
**electroluminescent** device acenaphthoindenoperylene

IT **Electroluminescent** devices  
 (bis(acenaphthoindeno)perylene derivs. for high-luminance  
**org. electroluminescent** devices)

IT 2085-33-8 24601-13-6 123847-85-8 146162-48-3 146162-52-9  
 169224-62-8  
 (bis(acenaphthoindeno)perylene derivs. for high-luminance  
**org. electroluminescent** devices)

IT 256329-34-7P 256329-36-9P 256330-85-5P 256333-36-5P  
 256333-46-7P 256333-48-9P **256333-50-3P**  
**256333-51-4P 256333-52-5P 256333-53-6P**  
 256333-56-9P 256333-58-1P 256333-59-2P  
 (bis(acenaphthoindeno)perylene derivs. for high-luminance  
**org. electroluminescent** devices)

IT 231632-01-2P 256329-38-1P 256329-40-5P 256329-42-7P  
 256329-43-8P 256329-44-9P 256329-48-3P 256329-49-4P  
 256329-51-8P 256329-52-9P 256329-54-1P 256329-60-9P  
 256330-81-1P 256330-83-3P 256330-84-4P 256330-86-6P  
 256330-87-7P 256330-89-9P 256330-90-2P 256330-91-3P  
 256330-92-4P 256330-93-5P 256330-94-6P 256330-95-7P  
 256330-96-8P 256330-97-9P 256330-98-0P 256330-99-1P

|                     |              |                     |              |
|---------------------|--------------|---------------------|--------------|
| 256331-00-7P        | 256331-01-8P | 256331-02-9P        | 256331-03-0P |
| 256331-04-1P        | 256331-05-2P | 256331-07-4P        | 256331-12-1P |
| 256331-15-4P        | 256331-16-5P | 256332-24-8P        | 256332-27-1P |
| 256332-28-2P        | 256332-29-3P | 256332-31-7P        | 256332-77-1P |
| 256332-78-2P        | 256333-22-9P | 256333-24-1P        | 256333-25-2P |
| 256333-26-3P        | 256333-27-4P | 256333-28-5P        | 256333-33-2P |
| 256333-34-3P        | 256333-38-7P | 256333-40-1P        | 256333-45-6P |
| 256333-47-8P        | 256333-49-0P | <b>256333-54-7P</b> |              |
| <b>256333-55-8P</b> | 256333-57-0P | 256334-57-3P        | 256334-58-4P |
| 256334-59-5P        | 256334-60-8P | 256334-61-9P        | 256334-62-0P |
| 256334-65-3P        | 256343-53-0P | 256343-54-1P        |              |

(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)

IT 230636-45-0 256330-88-8

(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)

IT 256327-97-6P

(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)

IT 591-50-4, Iodobenzene 624-31-7, 4-Iodotoluene 10486-08-5  
20607-43-6, Isopropylmercaptan sodium salt 256327-96-5

|                    |             |             |                    |             |
|--------------------|-------------|-------------|--------------------|-------------|
| 256328-08-2        | 256328-09-3 | 256328-10-6 | 256328-11-7        | 256328-12-8 |
| 256328-13-9        | 256328-14-0 | 256328-15-1 | 256328-16-2        | 256328-17-3 |
| 256328-18-4        | 256328-19-5 | 256328-26-4 | 256328-27-5        | 256328-30-0 |
| 256328-31-1        | 256328-32-2 | 256328-33-3 | 256328-34-4        | 256328-35-5 |
| 256328-36-6        | 256328-37-7 | 256328-39-9 | 256328-40-2        | 256328-41-3 |
| 256328-42-4        | 256328-43-5 | 256328-44-6 | 256328-45-7        | 256328-46-8 |
| 256328-47-9        | 256328-48-0 | 256328-51-5 | 256328-52-6        | 256328-58-2 |
| 256328-60-6        | 256328-61-7 | 256328-62-8 | 256328-64-0        | 256335-10-1 |
| 256335-11-2        | 256335-12-3 | 256335-13-4 | 256335-32-7        | 256337-55-0 |
| 256337-68-5        | 256337-69-6 | 256337-70-9 | 256337-73-2        | 256337-74-3 |
| 256337-75-4        | 256337-77-6 | 256337-78-7 | 256337-83-4        | 256342-76-4 |
| 256342-77-5        | 256342-78-6 | 256342-79-7 | <b>256343-03-0</b> |             |
| <b>256343-07-4</b> | 256343-08-5 | 256343-09-6 | 256343-10-9        |             |
| 256343-14-3        | 256343-15-4 | 256343-55-2 |                    |             |

(bis(acenaphthoindeno)perylene derivs. for high-luminance  
org. electroluminescent devices)